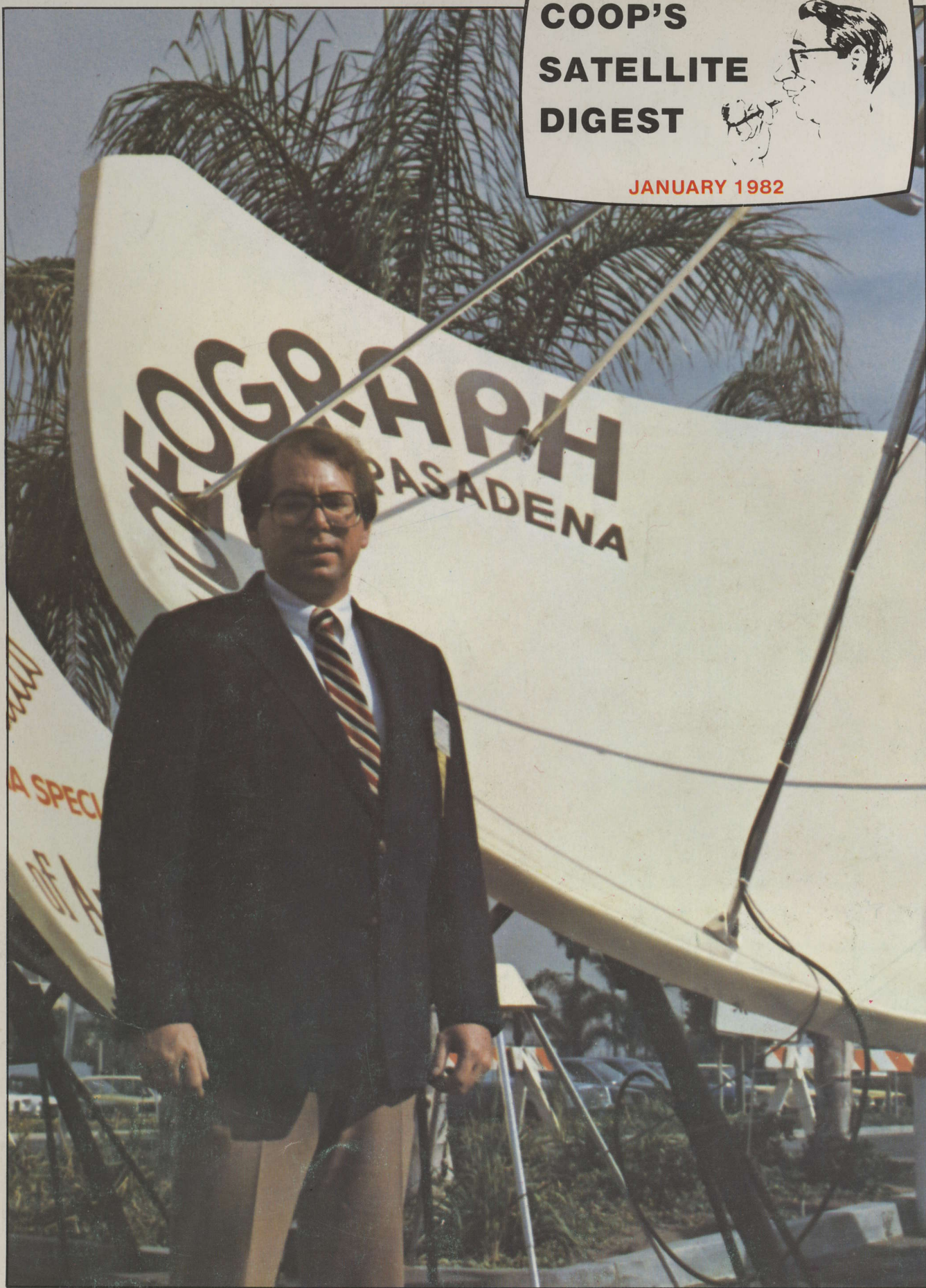


**COOP'S  
SATELLITE  
DIGEST**



**JANUARY 1982**





# APOLLO<sup>TM</sup>X9

## Birth of a legend

National Microtech, Inc. introduces Apollo<sup>TM</sup> X9 Satellite Antenna.

National Microtech, Inc. continues to sell more home satellite antenna systems than anyone in the world. Microtech's new Apollo<sup>TM</sup> is so far advanced over our competition in features, performance, and cost- that we feel Apollo<sup>TM</sup> is destined to become a legend in the satellite industry. If you are interested in buying or selling Apollo<sup>TM</sup> systems, give us a call today. Remember, no one sells the Apollo<sup>TM</sup> but

Microtech dealers and distributors. See the legend today.



### DEALER PRICES

3 Units	\$1395
10 Units	\$1195
100 Units	\$1095

Optional remote satellite finder \$495 wholesale dealer price.

National Microtech, Inc.

## 1-800-647-6144

In Mississippi 601-226-8432



## COOP'S COMMENT ON TECHNOLOGY

### AN UNUSUAL CHOICE?

We started something last year. We named, on the front cover, our choice for "Man Of The Year", for the home terminal industry. Our 1980 choice was H. Taylor Howard, the first President of SPACE, the man who brought TVRO receivers out from the laboratory and onto the home workshop bench.

Taylor's contributions have been magnificent. He was the right man, at the right place, yes, at the right time. Selecting the Industry Man of the Year for 1981 was no easy choice. In spite of some serious differences of philosophy I had with Rick Brown (SPACE General Counsel), during the first half of 1981, he was a top runner for our choice. If he can keep this industry alive during 1982, he will be a shoe-in for Man of The Year 12 months from now.

If Taylor brought TVROs out from beneath a laboratory bushel basket, our choice this year took the ball Taylor passed onto an entire industry, and ran with it. His name is **David M. Fedric**. He is President of National Microtech, Inc., the industry's largest distributor/supplier of TVRO hardware.

We talk about Fedric the man, and National Microtech, the company, elsewhere in this issue. There are several things we don't say there. We don't explain, in detail, our reasons for selecting Fedric as our "Industry Man Of The Year". We'll do so here.

In our view, getting TVRO product out of the laboratory and into production was a first necessary step for this industry. Several people made major contributions to that effort. John Ramsey (Sat-Tec), Royden Freeland (ICM), Andy Hatfield (AVCOM) and Norman Gillaspie (Gillaspie & Associates) all worked hard at it, as did others. But building the equipment was only part of the challenge. **Getting it into use** was just as tough.

That's where Fedric's expertise came into play. He started out with a concept, untried, untested and unproven. He gambled, and had enough skill, luck and fortitude to make his concept work. Not perfectly. Not yet, anyhow, but then what is perfect in this world?

**Getting product into dealer hands**, making it flow into and through a national distribution line, is what the industry needed most in 1981. It created the framework for success, for growth, and for industry integrity which we sorely needed during the past 12 months. In short, what we most needed during 1981 was visibility. Proof that we were really here, amounted to something, and had at least the potential to be something significant in the scheme of future telecommunications.

Just as Taylor Howard experimented with different circuits in 1978-79, to find the right combination of transistors, capacitors and resistors to make the receivers perform, reliably and for reasonable user cost, Fedric had to experiment to find the right combination of products, packaging, warehousing and promotion to make the product move.

Five years from now, if we survive the next year and there is still a "home TVRO industry", National Microtech may well not be a name you see at trade shows. They may well stumble and slip from view, or they may well become so successful that some giant firm waving huge bucks makes them an offer they cannot refuse. Whether Dave Fedric is around or not, in 1987, is not important. What he did, when he did it, will matter however. He pioneered and he did his pioneering well enough that he survived his first hectic year. He did so with grace and dignity. He resisted the temptation to panic and run when the going got unbearably rough; as it did several times during 1981.

**The success of National Microtech**, simply by sticking it out and being there as we start 1982, is one of the major reasons we see firms like Channel Master, Scientific Atlanta/Zenith/Heathkit, Winegard and others of similar stature jumping into our industry. Each of these firms, with aspirations of distributing large amounts of product on a national or an international basis, studied NM's pathways during 1981. They liked, enough, of what they saw that they have entered our industry. That fact alone tells us a great deal about the impact National Microtech has had on our 1981 growth.

**David M. Fedric**. The Home TVRO Industry's "Man Of The Year" for 1981. You did well in 1981, David. Now do better in 1982!

### OUR COVER

David M. Fedric and two original partners parlayed a \$6,000 home terminal into a \$30,000,000 a year business between the Spring of 1980 and the end of 1981. Find out how, starting on Page T-8.

CSD  
TECHNOLOGY



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## SVS '81 ANAHEIM WHERE ARE WE HEADED?

### INDUSTRY TRANSITION

Few who have attended past SPTS/SBOC events would find fault with this instant analysis of the late November SVS gathering: This is an industry in transition, gripped with the throes and thrusts of change.

Virtually everything we encounter in the decade of the 80's seems, on reflection, faster paced than the recently completed decade of the 70's. The home or small TVRO industry was barely alive in the 70's. The 80's is "the decade" for this new business activity, and the rate of growth seems almost out of control.

Anaheim gave us the opportunity to witness just how fast the home TVRO industry is changing, growing, and adapting. Those

who cannot grow and adapt are dropping (like flies). Those who believe they can adapt are popping out of garage workshops and small electronic shops at a dizzying pace.

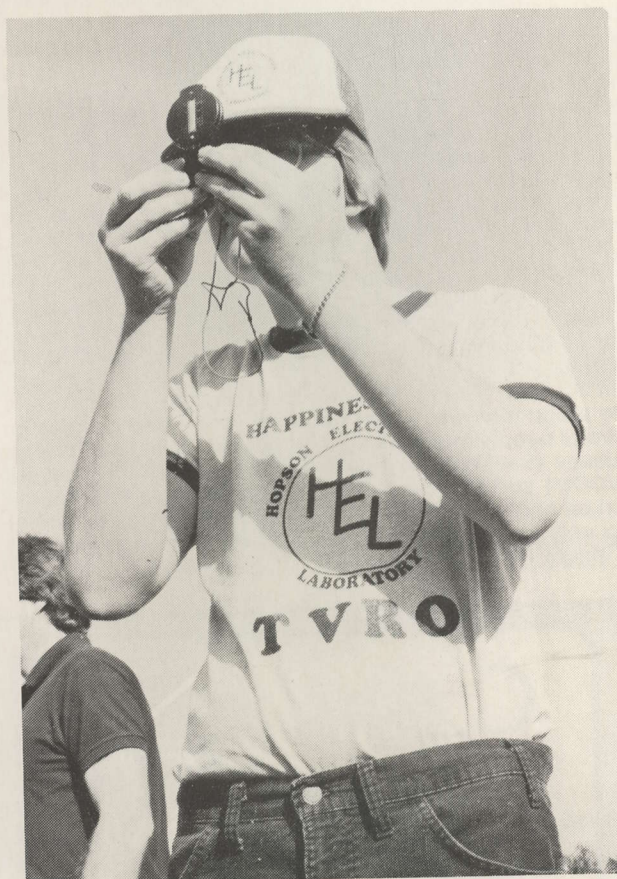
**Several important things** happened in Anaheim. SPACE finally got its message across. The pending Waxman Bill, designed to derail the growth of private terminals, finally unified the industry. Those who felt they could not "afford" the "luxury" of supporting an industry trade association finally came to grips with the reality that if they continued to sit this one out, they were facing the very real prospect there would be no industry to participate in. And soon. Before Anaheim, those in the industry who support SPACE were outnumbered by those who did not support SPACE. After Anaheim, the majority of the **suppliers** now support SPACE, and those who do not are hopefully feeling uncomfortable about their short sidedness.

We also were able to finally get some good, verifiable "handles" on just how big the industry currently is, at Anaheim. We, like others, have been somewhat uncomfortable with our past measurement techniques, although after we did finally get our "handle" the earlier reports turned out to be amazingly close to the mark. It works out this way:

- A) We polled original equipment manufacturers in a number of key areas; such as LNAs for example. On a manufacturer-by-manufacturer basis, using their **own** individual monthly shipping numbers, we were able to total the number of units going into distribution.
- B) Then by cross checking these numbers against the reported receipts and shipments from several key distributors and dealers, we were able to create an accurate self-checking profile of what equipment is moving, where, and how, in a typical month.



IF the elevation angle checks, where is the bird?



HAPPINESS IS...finding north, then the bird! At Anaheim's SVS '81 antenna lot.



We finally have a high confidence factor in our numbers. It turns out this way:

- 1) As we entered 1981, the marketplace consisted of approximately 350 complete private or home terminals per month.
- 2) As we leave 1981 (month of December), that same number is 2,400 per month.

The 1981 growth curve was, taken over 12 months, an almost linear growth line or curve. There was one aberration this past spring, starting in March for some suppliers and April for others. The aberration lasted through June for most suppliers, July for others. During that period, new plant orders dropped by as much as 50% in the worst cases, as little as 10% for the better cases. At least one prominent distributor warns us to expect a similar drop this coming late spring - early summer, suggesting that buying interest in terminals can and will drop each year (in this period) simply because of seasonal leisure time activities.

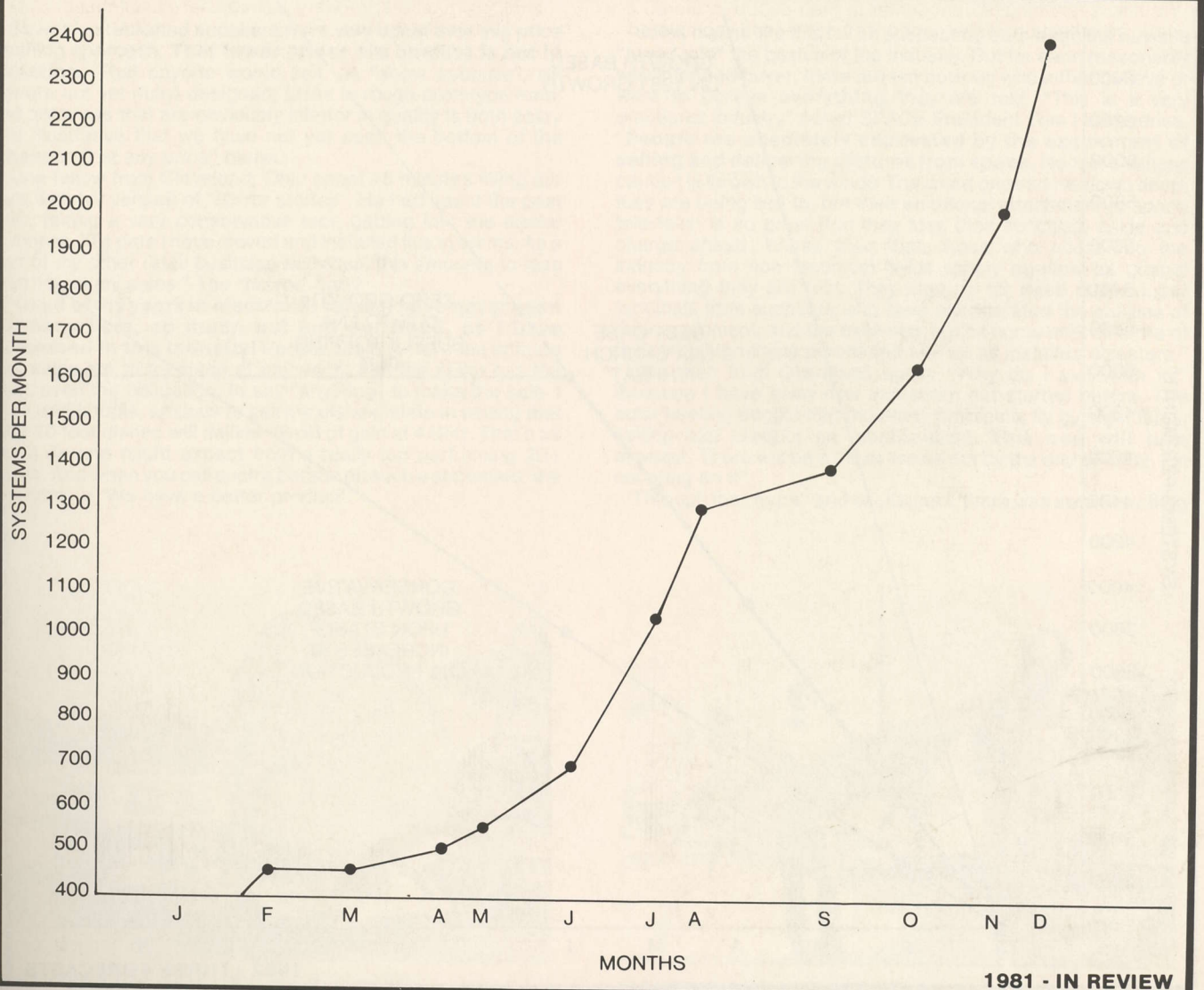
For the slow calculator hands, this puts us into a 1981 and 1982 posture as follows:

- 1) **During 1981**, it appears that a total of 12,750 private terminals moved into the marketplace. That is a per month average of 1062 (.5) units.
- 4) **The rate of growth**, however, was very significant. Between January (350 units) and December (2,400 units) we saw a growth of 685%.

- 4) And, where we entered 1981 with an "annual volume" of 4,200 systems (350 times 12), we left 1981 with an annual volume of 28,800 (2,400 times 12).

Which brings us to forecasting, with some degree of accuracy, 1982. This is your basic "fool's game" since there are obviously so many variables to be considered. Number one variable will be the progress, positive or negative form, of the pending Waxman Bill. Passage will assure a tremendous slump, if not outright death, of the industry. Setting that variable aside for statistical purposes, we then enter the world of accurately defining our rate of growth during 1982.

We can take the conservative approach and decide the growth will be "zero". That our monthly equipment flow rate for the end of 1981 (2,400 equipment packages per month) will **stay the same** during 1982. We already have that number; **28,800** terminals for **all of 1982**. That would be a "rate of growth" of 225%, over 1981. Not exactly backward. Or, we could take the optimistic approach and suggest that the **rate of growth**, a percentage, will be equal to the 1981 rate of growth. Here we take the rate of growth, a percentage, from January 1981 to December of 1981 and apply the same percentage to 1982. That percentage on a month to month basis is established; 685%. If we enter 1982 with a monthly rate of 2,400 units (the same number we left 1981 with, and in itself a conservative number to use for two months in a





row), we end up 1982 with a forecasted unit count of 86,063. That could clearly be an unmanageable number.

Enter into this analysis a realistic look at the manufacturing capability of the industry as a whole. The industry got through 1981, even up to the 1981 monthly total of 2,400 in December, because certain key segments of the industry were in a position to cope with the rate of growth. Foremost amongst these has been the LNA suppliers. As a companion report in this issue shows, the total output capacity of the Amplica/Avantek/Dexcel/MA/COM quartet, in LNAs for the private terminal field, has been able to grow comfortably to the 2,500 per month plateau. But there is strong evidence to suggest the combination of the four LNA suppliers would be very hard pressed to do more than double (at the outside) their production capabilities during 1982. And that suggests there may be a leveling off point, a "we can't turn out anymore, for the time being", someplace before the 5,000 per month mark. If this is an accurate appraisal, someplace around June of 1982 the LNA crunch could get very real. At least one major user of LNAs, who today is taking 1,200 per month for his own distribution network, feels the front shock waves of such a crunch is already here. Read the report on Dave Fedric, in this issue, for more on this subject.

This factor, then, would give us another number; one someplace between the conservative approach and the optimistic

approach. It would accept the basic high rate of growth started in mid-1981, and allow it to continue into the first half of 1982. Then it would put the "cap on growth" because of a basic shortage of LNAs and this would result in a modified growth curve for the balance of 1982. We have diagrammed all of this for you here.

**The numbers aside**, what else did we see and learn in Anaheim?

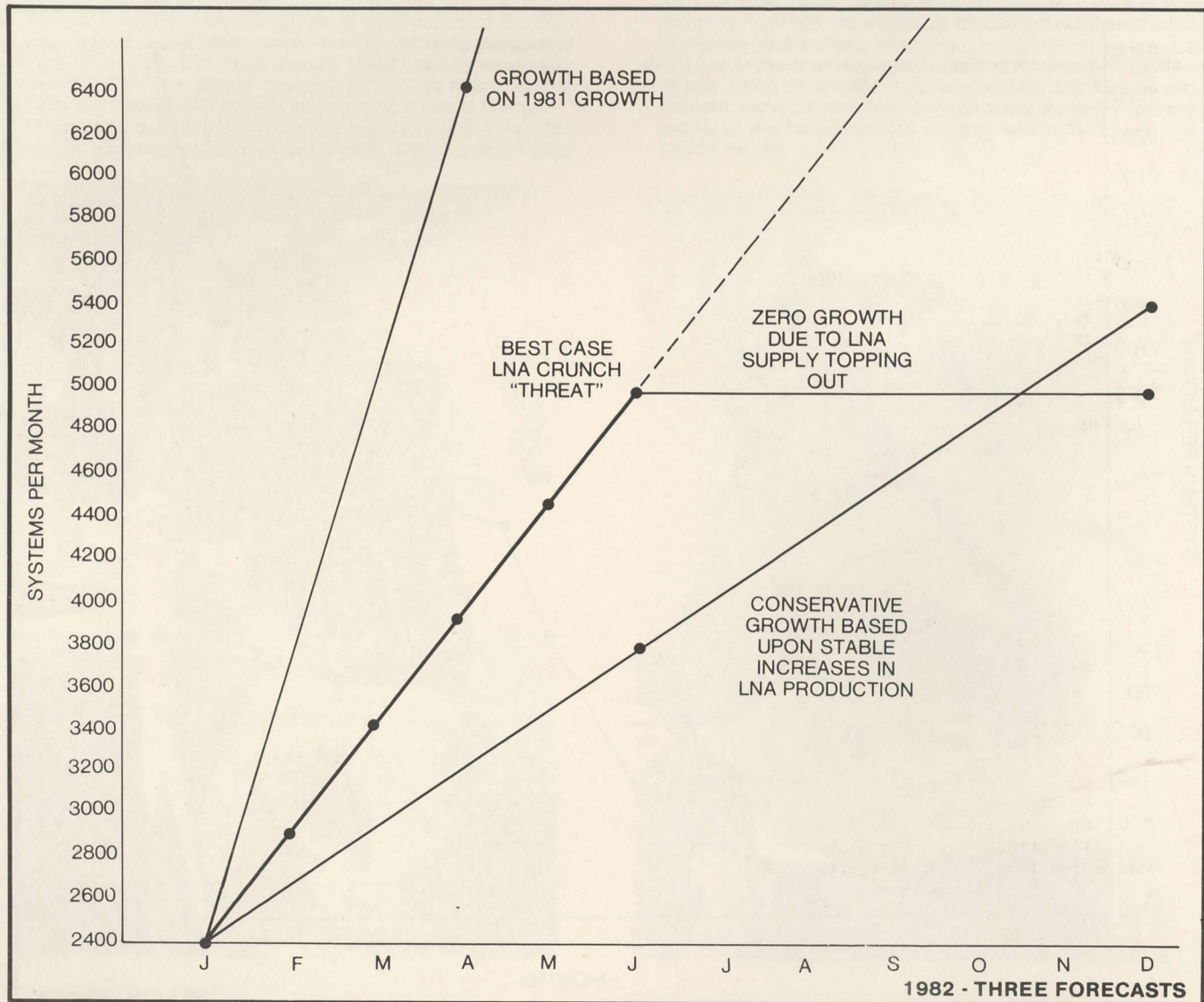
Pricing. There was one booth that offered dealers the "opportunity" to buy a ten foot (fiberglass) antenna, or a 110 degree LNA, or, a TVRO receiver **for \$399 each**. You read right. Or, the whole package for \$995. WE are **not** going to tell you **who** this was, and here is why.

1) Their LNA was **not available** for delivery and a very rough prototype was finally trotted out for display the second day. It did not look that good.

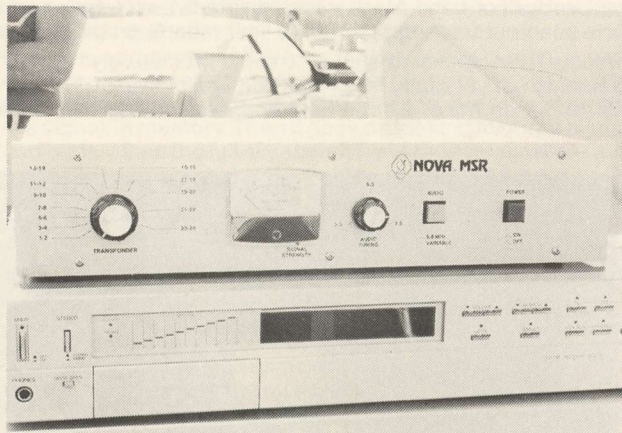
2) Their receiver was **not available** for delivery.

3) Their antenna got our award for what Taylor Howard termed "The worst looking piece of trash I have ever seen".

The firm was writing orders for all three components, and one of the firm's representatives told us late on Sunday they had taken "quite a few orders for product" including one master order for LNAs; 100 units. The firm in question **will go** to Korea with the orders and interview "up to 20 prospective sub-contractors" to build the units for them.







**KAUL-TRONICS Nova Master** is another new receiver entry in the field; shown at Anaheim.

Several established suppliers were very upset over this price slashing approach. **That lower prices are coming is not in question.** That anyone would sell, as "show specials", receivers not yet (fully) designed, LNAs in rough prototype form, and antennas that are obviously inferior in quality is both scary and illustrative that we have not yet seen the bottom of the "cheaper it at any price" barrel.

One fellow from Cleveland, Ohio spent 15 minutes filling our ears with his version of "horror stories". He had spent the past year, taking a very conservative tact, getting into the dealer business. "To date I have moved and installed five systems. As a part of my other retail business activities, this amounts to less than 1% of my sales." The "horror" part?

**"In all of my years in electronic sales, I have never seen so many liars, so much out and out fraud, as I have witnessed in this industry!"** People seem to have the attitude that sales are to be made at any price; that the seller has the right, even the obligation, to say "anything" to make the sale. I have had people, anxious to sell me dishes, state in writing that their 10 foot dishes will deliver 46 dB of gain at 4 GHz. That's as much as one might expect from a really top performing 20+ footer. And when you call such a person on such a statement, the response is "We have a better product."



**OOPS!** There goes the focal point. Rolling a dish down the freeway can have several meanings. For this would-be exhibitor it meant a call to the insurance agent!



**MOUNTS** are still the backbone of the antenna biz as these Anaheim exhibitors work to get their system up and operating before exhibit hall time.

Sales claims like this fall on suspecting ears when the buyer is "tuned into" the basics of the industry. But for each reasonably well informed buyer, there are ten novices who either believe or want to believe **everything** they are told. "This is a very emotional industry" noted SPACE President Tom Humpheries. **"People are absolutely captivated by the excitement of selling and delivering pictures from space."** Normal business caution is thrown to the winds. The smart ones know, down deep, they are being lied to, but their emotional attachment to space television is so great that they toss their concerns aside and charge ahead. Worse than that, those who come into the industry from non technical fields simply swallow as gospel everything they are told. They sign up for three super-duper terminals from suppliers who have exaggerated the abilities of their equipment, and the truth may not hit home until all three of their initial terminals purchased end up as installed disasters."

The man from Cleveland again. "Why do I stay with it?" Because I have seen new industries get started before. The solar heating people had the same problems; fly by night firms, selling bad product on emotionalism. **This one will turn around.** There will be a major shake out by the end of 1982. I'm counting on it."

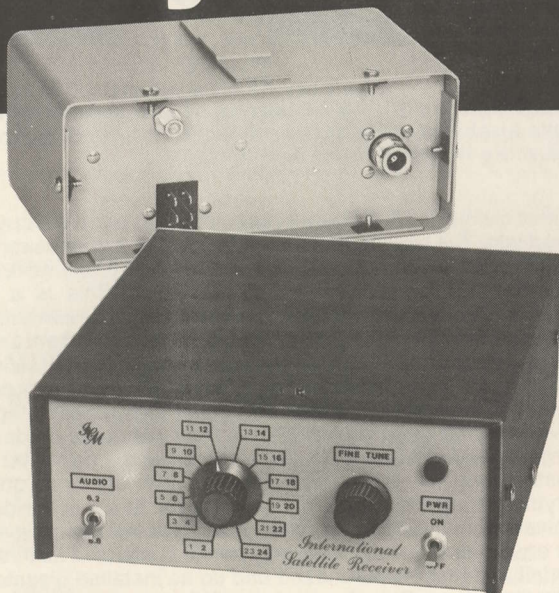
Through the "hype" and excitement, there was **some** exciting



**LIGHTWEIGHT AND STOUT** - Anaheim brought out newer panelized antenna approaches and many are going in the right direction; lighter, and stronger!



# The ICM TV-4400 Satellite Television Receiver System



**NOW! New Lower Price!**

**\$1,295** Quantity Discounts  
Available

The ICM TV-4400 offers outstanding performance with a two-unit "system". The double conversion RF downconverter, located at the antenna, provides for minimum cable loss. The baseband receiver front panel controls include a step tuning channel selector, fine tuning and power switch and the 6.2 or 6.8 MHz audio selector.

Other features: Automatic frequency control, automatic gain control, standard video output, subcarrier output for future accessories, wideband phase lock loop demodulator, selectable video polarity, internal audio and video controls, provisions for an RF modulator, standard jack for optional remote control, built-in bandpass filter and D.C. block.

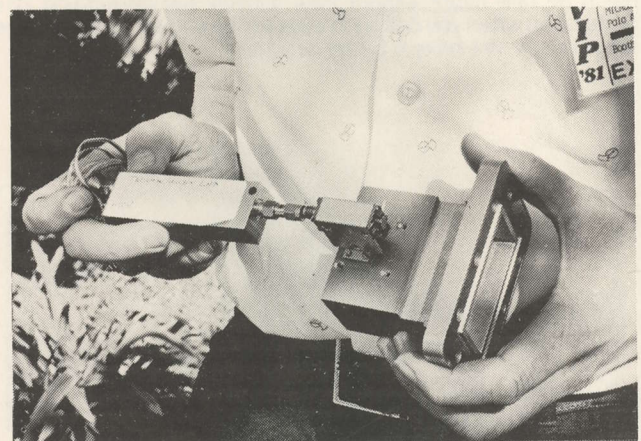
**OPTIONS:** REMOTE CONTROL UNIT \$109.45  
TUNABLE AUDIO UNIT \$189.95



INTERNATIONAL CRYSTAL MFG. CO., INC.  
10 North Lee, Oklahoma City, Oklahoma 73102  
405/236-3741

**new product** on hand. Many were (admittedly) proto-types, and it has been our (recent) practice to limit reports on proto-type products to second-seat status, to avoid prematurely "hyping" something not yet ready for production and delivery.

Of those on hand, a total new approach to systems from



**FROM TESTING to LNA MANUFACTURE** - Jack Trollman, half of the Omaha team that conducted antenna tests, has a fledgling LNA business started. With LNA shortages certain in '82, Jack may be entering at the right time. Specs are 120°K and 45 dB of gain. Price is lower than others and size is small. (see above). Jack is looking for investors.



**Janiel Systems** was very impressive. The Dushane boys have done their home work well and were demonstrating the **basic** working parts for a totally computer operated home terminal; antenna, and receiver (LNA is standard). You "touch" a panel and the antenna starts searching for a signal. It finds a signal, and stores the coordinates of the antenna, **plus** the strength of the signal, in memory. Then it goes on looking for more signals, and birds. When the full sky search is over, the terminal has automatically found **every** bird in the sky, and stored **where** each is and what number of channels was found, on each. Then it reads all of this back to you, and you can tell it (by touching the front panel again) what you want it to retain in memory, and what you want it to go to. It also has the ability to locate all of the subcarriers on each transponder, store that data, and then tell you on the readout display what data it has stored in the memory bank. The day of the **fully automated** home terminal is very close. Best of all, the kind of pricing they are suggesting is very close to the kind of price you would pay now, as a dealer, for a top of the line (home) receiver, 10 or 12 foot dish with **mechanical** motor drive and a suitable LNA. We questioned their ability to produce all of this, in quantity, and learned that one of the trio of brothers recently sold out a \$50,000,000 designer jeans business to fund this enterprise. The Janiel Systems folks will bear watching!

**Advanced Video Communications** (7652 4th Av., White City, OR 97503) displayed a very good quality dish and automated dish drive system. Keyboard entry for satellite location, you have full polar mount adjustment range from the Arctic Circle south to Mexico City, and horizon to horizon coverage. Particularly impressive was the strength of the antenna and mount portions of the product, and the structural integrity of the aiming systems.

**Arunta Engineering** (P. O. Box 15082, Phoenix, AZ 85060) moved us a step closer to the ultimate, top-end receiver package with a \$3295 home unit that does everything but tell you when a



**HAWAIIAN VETERANS** - Jamie Gowan of ADM (left) and Guy Davis of National Microtech inspect a new ADM LNA/rotor assembly cover. As Jamie notes "When you have hot sun beating down on the LNA, the noise temp really climbs fast. In Hawaii we used Palm leaves; back here on the mainland we need something stouter!"

## Chaparral Super Feed II... Now the Best is Inexpensive

New manufacturing methods engineered by Chaparral now deliver the same quality and performance you expect from all our products, with one difference — lower price.

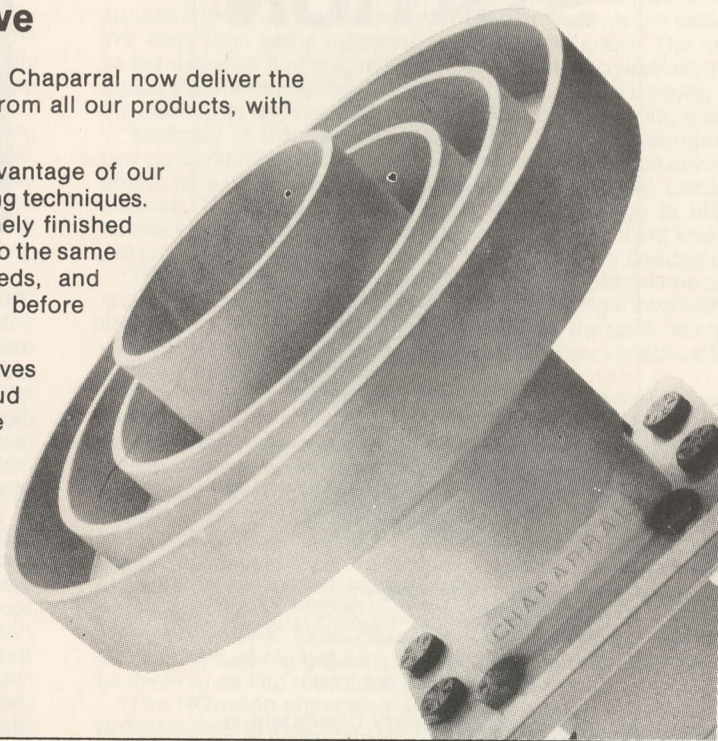
The new Chaparral Super Feed II takes advantage of our success in developing less costly manufacturing techniques. A 20-ounce unit cast as a single piece in finely finished solid aluminium, the Super Feed II performs to the same exacting standards as other Chaparral feeds, and undergoes the same rigorous inspection before shipping.

At Chaparral, we've always prided ourselves on design and workmanship. Now we're proud we can offer that same quality at a price that makes high performance economical.

Super Feed II	1 unit	\$60.00
	5 units	\$50.00
	10 units	\$43.00
	100 units	\$35.00

**CHAPARRAL  
COMMUNICATIONS**

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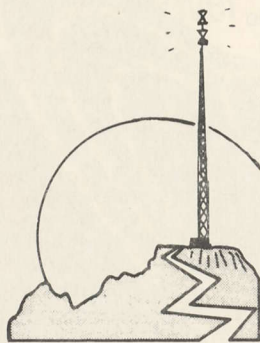
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LPTV Crash Course Feb. 6-7 Shoreham Hotel  
Washington, D.C. \$100

LO-POWER COMMUNITY TV PUBLISHING  
7432 E. Diamond, Scottsdale, AZ 85257

bird has run low on fuel! Ed Grotsky has approached the video section of this unit with the same engineering skills he has put into the Arunta audio decoder systems. The black-lighted front face plate and the sleek receiver styling says that the user will settle for nothing but the best. A 100-per-month production rate is now underway.

**Chaparral Communicatians** (P. O. Box 832, Los Altos, CA 94022) joined the "magic feed rotation" business with a package similar in concept to the Luly feed rotation system first seen in Omaha. There could well be a price reduction ahead, in the immediate future, for this product area, now that two separate firms are offering equipment with these features. The day of the Alliance (or whatever) antenna rotator is just about over.

**ADM's** Jamie Gowen jumped into the big antenna business with a 20 footer. The new version (supplementing their basic 11 and expando 13 footers) follows the same design approach as the smaller versions, and is panelized. Jamie decided to move "up" after a series of trips to Hawaii, where he determined that a 13 footer was not going to make the grade. We'll have a report on the Hawaii antenna / bird tests, in an early issue of **CSD**.

**RL Drake Company** has the production line flowing for receivers now; they displayed their first model at Omaha. Reportedly the present production line is 700 per month, with good abilities to expand it on approximately 30 days notice.

**Sat-Tec Systems** displayed a new discriminator demod receiver which really cleans up the PLL tear look that has been something of a user problem through the years. We rated the new unit as having very good picture quality, even on weaker transponders, at the show. John Ramsey also advised that a \$495 receiver kit, using double conversion techniques, will be available early in the spring. The high IF and the 70 MHz IF will be pre-wired and aligned. Again, that is early spring availability so **don't bug John now** for delivery information.

## INDUSTRY MAN OF THE YEAR DAVID M. FEDRIC

### RIGHT PLACE / RIGHT TIME

Early in 1980 a trio of businessmen in northern Mississippi decided to pool their resources. They put \$6,000 into a common pot, and went shopping for the three major component parts for a private TVRO. One year later this trio would be operating the home terminal industry's largest distribution network. Eighteen months later they would be receiving and shipping 1,200 low noise amplifier per month, and manufacturing at seven geographic locations nearly 1,000 of their own antennas per month.

One of this trio is our industry "Man Of The Year" for 1981. In all fairness to the **group effort** involved, the award should be thought of as a "corporate award" for the year 1981 since no single man could have accomplished what the firm has done, in such a short period of time, alone.

**The company is National Microtech;** our selection for Man Of The Year is David M. Fedric, firm President. The story of National Microtech is an example to any small businessman who has dreams and aspirations of "making it big" in an exciting new business area.



Their first \$6,000 investment was something of a disaster. It took an eternity for the equipment (in ultra short supply in early 1980) to show up. When it did arrive, there were weeks of frustration trying to make it work, and getting the antenna together. When it finally did bring in pictures, there was the solid realization that there had to be a better way to (1) get equipment, and (2) install it.

Fedric. **"We were not convinced** this thing was for real. I was convinced that people would pay for a system, but I never felt that there was much of a market out there for \$10,000 and up systems; such as Scientific Atlanta was addressing at about that time".

Fedric and group decided to try their hand at acting as a "broker" of equipment. Their concept was simple enough; they would pool the buying needs of several dozen dealers. The logic was that if they bought in larger quantities, they would get better pricing, and, better delivery. Ultimately that would turn out to be the right approach. But not before they had some difficult times. Their first real problem was the buying public. Well done advertising produced hundreds, then thousands of sales leads. What was missing was the "qualifying" phase; people who heard or read about National Microtech were anxious to have a terminal. Fedric, like many who would follow, discovered that each potential customer was requiring far too much time on the telephone to "qualify". **"We would be on the phone all day** and most of the night, answering the same basic questions, over and over. I decided there had to be a better way to get the potential buyers up to speed. So Horton (Townes) and I sat down one weekend and we put together a booklet. This was a very basic booklet that explained what a home terminal was, how it works, and what the various component parts and options cost."

**Fedric was concerned** that the book be a merchandising tool, but not a give away. In those early days the investment in producing such a book was not insignificant. Fedric again. **"We felt** that it was such a little book that a price of ten dollars was probably steep. On the other hand, we didn't expect to really distribute **that many**, and the book had to pay for itself. We put on the back of the booklet a statement that if anyone purchasing the book did not feel they were getting their money's worth, we would gladly refund their money".

"We were getting hundreds of calls each day at that point. The people responding to the **TV GUIDE** advertising were simply unqualified. They had no concept of the pricing structure, or the special problems involved with a home terminal."

**"When we put that handbook out,** we were not getting anywhere. We were as busy as we would ever be in the future, but the **sales** were not there. With the Handbook, which we offered to callers, we included literature listing the equipment we handled. At the time it included an ADM antenna, KLM receiver and an Avantek LNA. The Handbook made the whole thing work. Now, for the first time, we had a selling tool that worked."

**The time frame here is mid 1980.** The closest SPTS event was San Jose, in July of that year. Horton Townes, representing National Microtech, attended the San Jose meeting. **"Horton was very impressed with David Barker** at San Jose. Barker obviously had created a better way to build receivers" (the single conversion, image reject receiver which Barker first described in the June 1980 issue of **CSD**). Fedric. "I traced what happened to Barker, after San Jose and ended up with Pete Dalton at KLM. Dalton's firm had just purchased the design rights to the Barker receiver."

On the early days of handling the brand new KLM receiver, ala Barker. **"It was a nightmare.** A lot of the product we really had trouble with. But, at the same time, we **could get** the product, and Pete was willing to work with us on repairing it when it was not working right. We had an earlier purchasing agreement with Andy Hatfield (AVCOM). Now Andy had a really top performing product. But we just could not get them (in the quantity necessary to support a distribution/dealer network). Remember this was all happening at a time when Andy and the industry were very busy. This was the fall of 1980, and AVCOM could only get us a few receivers a month. Our retail sales alone could not be supported by that kind of a delivery schedule. But Pete (KLM)



**DAVID M. FEDRIC / industry Man Of The Year for 1981 with one of his 1981 creations; the Apollo series antenna. Would you believe more than 900 such antennas per month are now being manufactured by and for NM?**

could. I told Pete "Tell me how many you can get me; tell me the truth". I asked him to tell me how many he could ship me; and then I would see if I could afford to buy that many.

**"So finally,** by the fall of 1980, we found that we could get product. And we were ready to move into what I really felt the industry needed; a single source for every part in the system.

**"We saw** that what we were really creating was a three tier distribution network. None of the equipment, at that point, was under our own brand name. We were, in effect, middle-manning the equipment. Channel Master, when they announced in May of 1981, started off with a two tier distribution program, since they had the three essential ingredients labeled as their own products.

**"We felt** that the industry, growing as it was at that time, would support a three tier approach; until it matured to a certain extent. We were then going aggressively after distributors. The key, to the success that we had, was our centralized approach to supplying everything the distributor needed, and to backing up the distributor and his dealers with a national marketing plan.

**"Nobody in this business** can afford to have their money tied up for months in advance. That includes us. Nor can anyone afford to extend credit except under very unusual circumstances. The industry is simply not mature enough to allow normal credit dealings. We felt the most important thing was to get product to people, (our distributors) when they needed it.

"The industry is growing so rapidly that there is no way we can create the kind of funding we need, without getting it from within the industry. We had a good line of credit with the bank, to start with, but they were reluctant to allow us to grow as fast as the industry was growing.

**"The Houston (SBOC) show** was probably the most significant show we ever did. It was the most important show for us because while we would later sell more equipment at later shows (Omaha for example), it was the shot in the arm that we needed to throw ourselves to the attention of the people in the industry. This was important to us because it served to focus on us, and it gave us credibility. It was the right approach - a business opportunity. It was the right approach - a business opportunity **conference** - at exactly the right time. Not just for us, but for the industry as a whole. This show, in Houston, brought businessmen to the field. They went home, hired technicians and salesmen, and this elevated the whole industry several pegs. It took it out of the back-of-car selling technique. That was important.

**"The HOuston show** also vindicated our approach to selling to distributors. We had created 180 different distributor **areas** in the United States. To qualify as a distributor, a fellow has to agree to take ten complete terminal packages per month. We now have nearly 70 such areas spoken for. That gives us a base



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shipping pool of nearly 700 terminals per month. This works well because this places a distributor close to virtually any dealer. The dealer can stock a single demo unit, use it to sell with, and then go to his nearby distributor to pick up the equipment he needs to make an installation. And this process eliminates the biggest single problem facing the industry; getting together all of the pieces and parts you need to make a sale. As we learned with the first installation we did, our own original \$6,000 pooled-resources terminal, when you have to shop all over the country for this piece, and that piece, it is simply not a very efficient system.

"Of even greater importance, perhaps, is the fact that the product does not work all of the time. Equipment breaks, or it does not work when it comes out of the carton. With our distributor program, the dealer simply takes the broken unit back to the distributor, and he gets a replacement on the spot. Some of our distributors are now qualified, and authorized, to do repairs. Others are not there yet, and we back them up by having them return equipment directly to the OEM. And all of this makes life easier, and more efficient, for the guy at the end of the chain; the dealer".

Coop spent several hours with Dave Fedric discussing the National Microtech approach to distributing product, and developing a national selling system. In this far ranging conversation, Fedric shared his belief in the future of the industry, and his forecast for new equipment and marketing trends in the year ahead. Over the course of the next two issues of **CSD**, we'll go



**A THIRD OF THE TRIO - Horton Townes, during a seminar session he conducted in Anaheim, is perhaps the most visible member of the top management team at National Microtech. Horton serves on the SPACE Board of Directors as well as conducting sales seminars for the industry from coast to coast.**



further into this marathon conversation and what it means for the industry.

**Our message here** is really much simpler than that. It is that David M. Fedric, with a great deal of assistance from Horton Townes and others on the NM "team", was smart enough to figure out what it was going to take to get the industry into a **professional** distribution position, at a time in our history when this growth phase was indeed the most needed ingredient to get the industry really moving. And here, for now, that is why **CSD** finds David M. Fedric to be the TVRO Home Terminal Industry "Man Of The Year" for 1981. A job well done Dave; keep it up in 1982!

#### FEDRIC / Part Two

In the February issue of **CSD** we'll move on with the Fedric and Coop conversation, held during the Anaheim SVS Show. In February, we'll see how National Microtech is preparing for the 12 GHz business, why Dave Fedric does **not fear** the development of 12 GHz satellites and terminals, and how he plans to move **2,000** complete terminal packages **per month** by the fall of 1982!

## SMALL SYSTEM APPLICATIONS

#### CROSS POLE ISOLATION

We have carried features and technical reports on adjusting your antenna feed for minimum bleed through from transponders operating on the opposite polarity from time to time. Our "Basic" and "Operations" manuals detail the problem quite extensively as well. I recently had an afternoon with no pressing projects and so decided to check out some new feeds on our Hero 6 meter dish. Without giving it much thought I pumped the Hero signals into a video switcher via a four way splitter and four separate, unrelated brands and models of TVRO receivers.

Starting with the big dish parked on F2 after mounting a new feed, I glanced at a monitor and noticed that the Alaskan feed on tR9 was getting into the TR8 signal. No problem, a simple touch up of the polarization rotator would cure it. While the rotor was turning the feed, I punched through the four receivers on the antenna and quickly noticed that one of the receivers was showing far more cross pole "noise" than another. So I stopped the rotor at that point, still with cross pole signal showing on the screen, and ran through all four TVRO receivers. To my surprise, each had widely varying degrees of indicated cross pole. One in fact was already clean (best case) of any cross polarized signal, while another was so filled with cross pole garbage that viewing of the picture was difficult.

I began studying the "noise effects" of cross pole signals back in 1978 or so; when RCA first began experimenting with regular service on both polarizations. I observed, while editing the publication **CATJ** at that time, that cross pole "nulling" (i.e. aligning the feed for minimum sign of the non-desired polarity signal) was going to give field users some fits with 24

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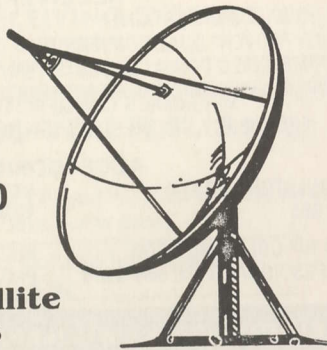
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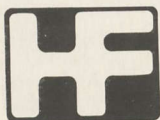
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transponder birds. I also published a report I spent six months preparing, showing that a heavy rainstorm at the uplink site could (and often would) cause the signal going to the bird to "skew", and in the process arrive at the bird sufficiently "out of true" to bleed into the immediately adjacent, cross-polarized transponder.

What intrigues me at this time is that there is (by my observation) an incredible difference between receivers. I am not ready to identify which units are involved in the current tests, yet, but it does appear that receivers employing a certain **type** of demodulator (approach) are far more likely to exhibit cross pole "noise" or "garbage" than receivers employing **another type** of demodulator. In your hands, this means that if you happen to be employing receiver type "A", you have a leg-up on not being bothered by cross-polarized signals than if you are using receiver type "B".

Now some might argue that as long as the feed is equipped with a rotation device, the receiver's susceptibility to cross pole "noise/garbage" is not important; provided there is a (feed) null point where the non-desired cross polarized signal can be dropped out. I would agree if:

- 1) Each and every person operating a private terminal knew what to look for, and how to "fine tune" the polarization rotator to snuff out the undesired signals; and,
- 2) Every terminal being sold had an infinitely adjustable polarization rotation control.

The truth is that many of the new antenna designs pre-set polarization adjustments; the user has only two options. Vertical, and horizontal. We have observed through the years that the actual polarization may shift up to 4 or 5 degrees at any given location; often parallel to locally "heavy" weather. That 4 or 5 degree "skew" is more than enough to cause the "null", if precisely set initially, to be lost. And up pops the cross pole garbage or noise. The truth also is that the majority of terminal users now are not technical, and could not re-null their rotator for minimum cross pole even if you told them what to do and how to do it.

This suggests to me that the "fix" in this case should be at the receiver. Since it is apparent that not all receivers are **as prone** to cross-pole pickup, those that have this problem should take steps to determine why they do, and the competition does not. I will be quick to point out that my observation indicates it has nothing to do with receiver sensitivity; the receiver on hand here showing the best tolerance for slightly mis-aligned feeds is also the receiver (coincidentally) with the best sensitivity and low threshold performance.

As we have pointed out repeatedly, signal leaking into your receiver from a cross polarized transponder looks almost exactly like normal "weak input" or "low CNR" reception. It is almost impossible to tell the difference between "noise sparklies" and "garbage sparklies", until the cross pole signal becomes so strong as to produce a "frame bar" across the desired signal.

With Western Union switching to 24 channel (dual polarization) birds in 1982, the sky will be filled with cross pole signals. The time to sort out receiver engineering problems is now.

### THE YEAR that was

1981 will, we suspect, be recalled in future years as the "last of the good old days". The last year the new industry could afford to devote its major attentions to internal growth, and to largely ignore the threats from without.

Late in 1980 the stage was set in Houston, Texas at the first SBOC. That stood for "Satellite Business Opportunities Conference"; a special kind of SPTS where the emphasis was on equipping people to enter the home TVOR terminal sales and installation business. Late in 1980, the major receiver suppliers were AVCOM, ICM and Sat-Tec. Norman Gillaspie had not yet shipped a unit; the fabled Howard receiver, promised for the July ('80) SPTS had still not gotten out of the Canadian



manufacturer's lab, by SBOC. Another pioneer, Robert Coleman did show his version of a high quality, double conversion receiver at SBOC.

**SBOC Houston was upbeat.** SPACE's Brown and Howard did a strong pitch for supporting the new trade association, but the results were less than magnificent. Very few of the newcomers to the industry knew anything about FCC regulation (removed one year prior), and little understood the threat of new legislation. It had been close just prior to SBOC; an effort led by Brown and his "shock troops" had saved the industry from a bill that threatened fines of up to \$250,000 for merely "tuning in" a transmission unauthorized to be received.

SBOC Houston had been the first industry "outing" for a new firm from Mississippi; National Microtech. It was also the first for another newcomer; SatFinder. There were some 40 firms on hand; **half of them would be gone** 12 months later.

Riding the crest of SBOC '80, and basking in the luxury of a Presidential election year (which virtually brings the legislative and regulatory activities to a halt for six months or more), the industry coasted into 1980 confident that '81 was going to be "the year". They were right; it would be.

Hardware, and the shortage of same, dominated the first

## THE YEAR THAT WAS (1981)

four months of 1981. Many of the new dealers, "signed up" at Houston, were finding out there was more to selling TVROs than getting the customer's signature on the dotted line. **Good equipment was in very short supply; especially good receivers and antennas.** This created a "don't know any better" scenario that went like this:

- 1) The new dealer made a sale, but was unable to get the equipment he wanted to install. He had little to guide him, so he started shopping for **something** (anything!) he could install.
- 2) The new equipment arrived, and the combination of "first-time-itis" for the seller, and less than adequate equipment, produced one disaster after another.

After a few of these experiences, many of the Houston-excited dealer entrants left the field. But they left their mark. They had placed orders for equipment, and the suppliers were back lgged. Production finally came around, but then the new dealers were no place to be found. At the factory level, this produced a down turn starting early in May and lasting through late June for many. The pipeline simply got clogged up.

**But not for long.** Although the Washington (DC) SPTS was not touted as a dealer show, a high percentage of those attending were in fact new dealers, or, dealers to be. By now

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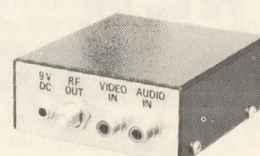
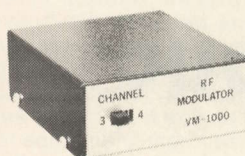
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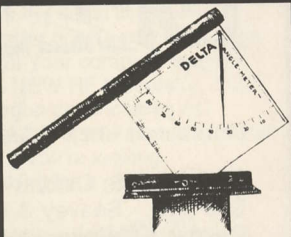
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the lesson of Houston was well ingrained in everyone's mind. If you are new to the field, stick to established equipment sources which you can count on to back you up with your first installation problems. Out of the Washington show came a feeling that while there was surely a market for less expensive packages, a dealer would do well to get his feet wet with the higher grade semi-pro terminals, since they allowed greater margins for dealer installation error; still capable of working.

The Washington SPTS saw the wide deployment of new-to-the-market single conversion design receivers. DEXCEL displayed their Japanese built package for the first time, and a few of the receiver suppliers talked about breaking the receiver (single or double conversion) up into a pair of housings; one to mount at the antenna (where the TVRO signals were frequency converted to an IF range), and, the other to mount inside at the TV receiver. The dealers liked the concept, since it would eliminate the need for runs of expensive and hard to work with 1/2" or larger cable. Those receiver manufacturers who were not prepared, prior to Washington, to sell two piece units quickly adopted a "we have that too" attitude on the floor.

But storm clouds were brewing. Congressman Charles Rose, the man who was instrumental in creating the House C-SPAN system, addressed the Washington gathering and told us "I believe that if any type of radio or television signals enter your property, you have the right to use them, privately in your home, as you wish". Rose characterized SPACE's Brown as "a boy scout" because of the SPACE policy that the home terminal users would gladly pay for the (HBO, et al) services; if only the program suppliers would accept the money! Rose urged the industry to band together and "beat down the doors of Congress with your message". Consumer advocate Ralph Nader, also appearing, echoed Rose's urgings. "This group is at the very frontier of making it possible for every American home to have instant access to hundreds of communication, entertainment and education sources".

If most left Washington on a "high", the feeling was short lived. SPACE, the industry-hope to work out the programming "mess", was in trouble. For more than one year, VP and General Counsel Rick Brown had been donating time, space and personnel to the SPACE effort. Early in May he served notice on the Board; arrange to pay him, or there would be a sudden lack of representation for SPACE in Washington. SPACE's Directors, each fully emersed in his own business growth problems, rose to the problem. It took a pair of meetings, and some teeth gnashing, but a plan was worked out. Part of the plan was the creation of something called "SPACE Pioneers"; a group of supplier-supporters who would fund SPACE monthly with fees in the \$300 range. Also out of the conflict came a newly drafted set of By Laws, establishing a 15 man Board. Elections, held through the summer in three phases, would result in a largely new Board of Directors and a new President; TVRO supplier veteran Tom Humphries of MA/COM.

The SPACE battle is two years old, but all of the important engagements are ahead. Most will come into focus, perhaps even "resolution", during 1982.

During 1981 there were several monumental equipment flops. The FCC caused one. In a sense, it was less of an equipment flop than a regulatory flop. LPTV was (and still is, if you can find any of the pieces) its name. LPTV. That stands for Low Power Television. Late in 1980, the FCC decided that virtually anyone who wanted to operate a television station could do so. You could, following the appropriate "non" rules,



operate on VHF channels with 1, 10 or 100 watts. The FCC **thought** that LPTV held the promise to create an entire new, grass-roots television industry. Satellites figured prominently in their grand plan, since it would be satellites that would inter-connect these neighborhood stations into "networks".

The Commission decided to accept "interim applications", while they were in the process of writing "interim rules". A panic swept through the established television broadcasting industry, and, networks. ABC and NBC applied for numerous LPTV stations. Ted Turner applied for more than 25. New, unheard of groups, formed overnight and some applied for more than 100 LPTV stations. Within 90 days the FCC had more than 2,000 applications. The TV industry, first begun in 1941, had only managed to "field" slightly over 1,000 stations in the intervening 40 years. The FCC began to retreat. Late in April they retreated all of the way, freezing LPTV applications, and announcing they were going to re-review their actions. At the time of freeze, more than **5,000 applications** were stacked up all over the FCC; most of them not even envelope-opened. If there were to be an award for "opening your mouth and sticking your regulatory foot in it..." the FCC would surely win that award in 1981.

Meanwhile, off-shore, 1981 was **the year** that areas surrounding North America discovered that satellite TV was not quite the forbidden fruit it first seemed like. Hero's Bob Behar spent six months of the year hauling a portable Luly Umbrella antenna from island to island and country to country proving that, "yes-indeed", you **could see** pictures out there in places such as the tip of Baja, California (Mexico), St. Maarten and Barbados. **CSD** investigated the issue headon, from a legal point of view, in our April 1981 issue. The FCC took a little longer; it waited until October to approve the concept, that, under the proper circumstances US domestic satellite relayed program suppliers, such as WTBS or HBO, could indeed be "legally used" in off shore, non-US locations. This switch-around in official US policy will make many headlines in 1982 as the real-world-impact comes back down to earth. At the manufacturer level, the approval has long term, significant ramifications. There will be intense new interest in maximum-sensitivity receivers, super-grade LNAs, and most of all, high performance antennas that squeeze the last fraction of a dB out of 6 to 8 meter structures that have been designed to knock down and transport easily into far away places.

In the hardware department we barge into 1982 with the number-one existing-equipment design question of 1981 still unresolved. "**How much receiver radiation is too much ...radiation?**" **CSD** spent a considerable part of the May 1981 issue exploring this problem. Radiation, from single conversion receivers, tends to "block reception" on other TVRO receivers in the vicinity. When many receivers are jammed into a close area (such as a SPTS with its dozens of receivers and antennas), the reception conditions become unbearably bad. As one chap tunes his single conversion through the channels, he "drags along" after him (or "pushes along ahead" of him) a local oscillator "carrier" generated within the receiver. This LO signal leaks and radiates out of a single conversion receiver, directly into the 3.7 to 4.2 GHz band. When it does so, it is so much stronger than the distant satellite signals that it "drowns out" the satellite reception.

Upon investigation conducted by SPACE's Rick Brown, it became apparent that existing FCC rules do not specifically address **this** situation. Such radiation is not illegal, in **this** frequency band. But it is messy. At least one single conversion receiver manufacturer (AVCOM) took serious steps to control the radiation in its receivers, by offering optional filter kits. Others seemed less concerned, and there is the germ of the ongoing problem. In the "real world", many manufacturers argue that since it is only at industry trade shows that receivers are packed close together (thereby amplifying the problem), they do not feel that expensive conversions should

be undertaken to tone the problem down. It is, as we said, an unresolved technical / design problem as we charge into 1982.

A few bad apples were weeded out during 1981. A couple of firms, accused in court, before consumer protection agencies, and here in **CSD**, of taking money, and then not delivering paid-for product, slipped quietly from view this past year. Some of these were trying to pop back, in disguise, as 1981 ended. As always, while we have matured substantially during 1981, the age old warning "**Caveat Emptor**" (buyer beware) continues with us. There are still suppliers out there who conduct fraudulent activities.

**In Canada**, the TVROs had an interesting year during 1981. They began the year under dire threat of jail and heavy fines and penalties if caught viewing **non-Canadian** TVRO signals. They ended the year, after court battles largely won by the private terminal viewers, with an apparent compromise by the Canadian authorities. In effect, if private parties wanted to watch US satellite television, so be it. Canadian authorities would simply not interfere.

The August Omaha SPTS was a classic in the series. Some 50+ antennas jammed the parking lot. Nearly 100 equipment booths lined the world's largest Holiday Inn exhibit hall. And the industry conducted its first antenna comparison measurement tests. There were no "winners", because one of the conditions of participation at the manufacturer level was that the results could not be used for advertising or promotion. But there were several losers; antennas that did not come up to performance "averages" established during the tests. Many of those losers were, of interest, among the more enthusiastic supporters of **repeating** this type of testing at future SPTS events. The truth is, that, when there are comparisons of apples and apples (i.e. antennas tested against one another by direct measurement **under identical conditions**), there are a few lemons in the crowd. We'll all benefit from that experience, because ultimately we'll get better performing antennas across the board. And we'll do it again.

**CSD** tested many products during the year. We wrote about perhaps half of these; the other 50% did not make the grade. Our policy, then as now, continues to be one of reporting honestly and accurately on the performance of products tested. When we find too many really serious "kinks" in a product, however, we simply don't write about it at all. **One** of the products we tested, and put into everyday operation here this past year, was the Hero six meter motor driven dish. We had our share of problems with this "monster antenna", as we wrote in October; including some cracked steel in the antenna mount, as it arrived here in "the islands". In reviewing what equipment improvements we saw during 1981, we have to tell you that in our estimation receivers as a product class improved the most during 1981. LNAs changed not very much at all, although they certainly did tumble in price (the **best** price offered in the January 1981 **CSD** was \$795 for a 120 degree model; by December the same LNA was being offered for \$545. TVRO antennas really didn't get much better, but they certainly did become more diverse. We counted the number of **different** antennas offered for sale in the advertising pages of the January 1981 issue; 12. By December, that number was 48. And that's a 400% growth in a year. The antenna business has certainly become more competitive, if nothing else! Motorized antennas did shape up in 1981, but (again) in our view, they **still** have a long ways to go to achieve complete trouble free, hassle-free typical-customer satisfaction. **That's still the engineering challenge of 1982.** Make an antenna that works to its theoretical efficiency, make it ship easily and in small packages, and make it track through the orbit belt quickly and with foolproof ease. And do all of this at a price that the average person can afford to pay.

Finally, 1981 was the year of delayed satellite service start-ups. The people who pay the bill, the cable TV systems, were hopeful that before 1981 was over they would have a new satellite (F3R) in operation. On that new satellite would be a



full 23 channels of service, and just over the horizon, up to 23 more on SATCOM F4. But alas, a combination of problems peculiar to the SATCOM launch, plus launch site problems attributed to the Space Shuttle set backs, delayed and delayed again the launch of F3R; and F4. This makes 1982 the year of not one, nor two, nor three...but four new birds of great interest. Joining F3R and F4, before the year is out, will be (we hope!) Westar 4 and Westar 5. And, between the **four new US domestic birds**, there will be 96 new video capable, and almost exclusively video-dedicated TV channels. Can you imagine the growth to result from 96 new US domestic video transponders in just a single year? Well, stick around; it's all slated to happen in the next 12 months!

## BIRD OPERATIONAL NOTES

**ANOTHER** New entry into the satellite operations business. American Satellite Company, providing packaged transponder time for narrow band (largely busines) customers on WESTAR and other satellites for many years, says it wishes to launch a pair of 4 and 12 GHz satellites. Launch dates set are 1985.

**ROBERT WOLD COMPANY** President Bob Wold, speaking before the SVS '81 Anaheim gathering late in November, told the group his firm will be in the market for independent portable downlinks for rent as a part of their new agreement with the Hilton Hotels Corporation to establish a nationwide Hilton Communications Network. HCN will go after business seminars, meetings, trade shows "via satellite", using the 210 US domestic Hilton locations as gathering spots. Wold warned attendees, however, that their past experience with portable downlinks has not been good, terming equipment and operators "not professional and shoddy".

**SKY CONGESTION** ahead. Mexican government says they wish to launch a pair of 4 GHz and 12 GHz dual band satellites between September 1984 and February 1985. The birds will have between 18 and 24 C band transponders, up to 3 K-band channels. SATMEX is looking at geostationary/Clarke orbit spots at 105 and 112 degrees (in the Anik window), or at 135 and 145 degrees (in the US region). That means to be resolved; can SATMEX keep its footprints, at these locations, out of US territory? Probably not at 135 and 145 since US and

Mexico share common borders. But at 105 or 112, the US acts as a buffer between ANIK to the north and SATMEX to the south.

**COMSAT** set to pull the plug on 12 GHz DBS sooner than anyone but they anticipated. Now they say they want to put up a pair of channels, using either ANIK C or SBS or other existing satellites, in 1983. The first two channels will be of lower EIRP than a dedicated DBS Satellite would provide, and require dishes as large as 6 feet plus appropriate 12 GHz electronics. This "marketing test" will be designed for coverage only in northeastern USA, even with 6 foot dishes, and will be scrambled. COMSAT says they will not go after individual home users at first, concentrate on condos, apartments and other multiple unit dwellings, ala the first approach used by MDS transmission firms. Fees will be in \$25 per month range for one 24 hour per day movie channel, and one 15 hour per day "mixed" channel. Rental fee covers monthly amount for equipment as well.

**AS CSD** predicted last fall, HBO will scramble. **Soon.** Firm says they have approximately 12 firms working on hardware; will reach a decision in first quarter of 1982. They are not happy with Oak Orion system, saying it is too complicated, degrades video quality beyond their "specs", and they want decoders available in \$1000 price region. The price tag is significant; it rules out digital approaches, for now.

**TELESAT CANADA** now about to accept offers to rent out 12 GHz transponders, reportedly for in excess of 2.2 million per year, to US users. Canada also putting finishing touches on national DBS policy, which they feel they must have to avoid having US DBS services spilling over into Canada, and taking over market there as 4 GHz services have done. They expect a Canadian version of DBS, at 12 GHz using new ANIK C bird to be launched late in 1983, by end of that year.

**INDONESIA** now looking for assistance in expanding international use of Domestic Palapa birds; birds (two) are generally under used and their capacity is going to waste. Next generation Palapa birds (24 rather than present 12 channels) will only increase the "under" use problem.

**NIGERIA**, which utilizes INTELSAT bird to feed TV program to 19 national states, looking at feasibility of providing each of states with own uplink for statewide service to augment present national service. This may eventually amount to their own, domestic, satellite.

**EUROPEAN** growth of private terminals, almost exclusively feeding Dutch CATV systems, has authorities in Europe up in arms. French are now scrambling OTS-2 12 GHz feeds to Tunisia, to prevent Dutch interception. Dutch government debating legislation to curb satellite importation. English group trying to line up regular transmission time on OTS-2, to feed entertainment programs via satellite (ala HBO) to Dutch and others, including Malta in Mediterranean.

**LATEST** marketing program from ADVANCED Electronics involves leasing of private terminals to, or through, dealers and distributors. Approval of each lease typically requires one week time, gets terminal into user hands with minimum of bucks down.

**CANADA'S** four channels (CANCOM) to northern viewers will begin seriously 1 January, with OAK scrambling slated to begin on service by end of March. Each descrambler is costing CANCOM around \$1,000 each.

## REMEMBER -

The October, 1981 issue of **CSD** (page T5) contained a special terminal operator reporting form to be used by you in reporting your reception quality on F3R **after** RCA makes the shift from F1 to F3R. If you do not have a copy of this form, please write to **CSD** for a copy today. **CSD, P. O. Box G, Arcadia, Oklahoma 73007.** From the reports filed, a very detailed analysis of F3R operations will be in the first available **CSD**!



**COOP'S BASIC MANUAL** - This is the brand new STTI Manual that is devoted entirely to the fundamentals of designing and installing a top performing private satellite terminal. What you **MUST DO** to get peak performance, on every transponder, all of the time. The little things nobody ever tells you about. Stuff you need to know!

**NELSON PARABOLIC MANUAL** - So you want to build your own dish? Nelson Ethier shows you how, using a very basic technique that combines aluminum and fiberglass materials that you can duplicate in your own garage or backyard. A 10 or 12 foot, high performance antenna is yours if you follow the detailed instructions in this Manual, and spend around \$300 to \$400 of your own money. What a way to go!

**GIBSON SATELLITE NAVIGATION** - The first time you try to find a satellite you will wish you had this Manual. Author Steve Gibson boils down the complicated world of navigating your satellite dish through the skies to several easy to understand and follow "basic" steps. And if you want a computer interface to your dish tracking controls, that's here too!

☐ **YES** - Send me **Coop's Basic Manual**. \$30 (US, Canada, Mexico) or \$35 (elsewhere) enclosed.

☐ **YES** - Send me **Nelson's Parabolic Manual**. \$30 (US, Canada, Mexico) or \$35 (elsewhere) enclosed.

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**COOP'S SATELLITE OPERATIONS** - Users tell us this is the most useful Manual they have in their libraries. The whole complete world of who transmits what, where and when, is uncovered for you. From Anchorage (Alaska) radio stations to NBC executive "intercom" lines, it's all here. With instructions for tuning in those many "hidden services" carried by satellite.

**COOP'S SATELLITE BUSINESS** - Don't go into the satellite terminal sales or installation business without this Manual. Don't even think about it! There are products and services out there in the marketplace you want to avoid, others you want to affiliate with. Coop surveys them all, and tells you what to do (and not to do) in this exciting new business field.

**"NEW" HOWARD TERMINAL** - Taylor Howard broke the do-it-yourself barrier with his "Howard Terminal Manual" in 1979. Now this updated version has complete circuit board layouts, parts location drawings and everything you need to build his high quality double conversion receiver. "The standard" of an entire industry. Ready for your at-home building efforts.

☐ **YES** - Send me **Coop's Satellite Operations Manual**. \$30 (US, Canada, Mexico) or \$35 (elsewhere) enclosed.

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☐ **YES** - Send me **"New" Howard Terminal Manual**. \$30 (US, Canada, Mexico) or \$35 (elsewhere) enclosed.

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**COOP'S SATELLITE DIGEST / CSD** - A living textbook leading the way for the development of the home/private terminal satellite industry. Sent via first class mail, the first of each month, to provide you with the latest in equipment and operating news promptly and in depth. The ONE WAY to stay on top of the fast moving industry!



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# ANNOUNCING.....

## NATIONAL SATELLITE OPPORTUNITIES CONFERENCE



MARCH 26 — 27 — 28, 1982 IN THE 60,000 SQUARE FOOT TARRANT COUNTY CONVENTION CENTER, FORT WORTH, TEXAS.

**PERFECT TIMING:** Just in time for the 1982 explosive selling season!

**PERFECT LOCATION:** A huge facility, conveniently located in America's great Southwest!

**PERFECT PROGRAM:** Three days of learning Seminars, with special "Certificates of Course Completion" for attending classroom sessions.

The Anaheim SVS Conference proved beyond all doubt that our TVRO Industry has hit the Big Time! So what better way to start 1982 than with SOC (Satellite Opportunity Conference) in booming, vibrating Fort Worth!

You'll catch the spirit of the city's thriving economy--four new skyscrapers (totaling 150 stories) under construction, 1600 added hotel rooms in the past year, and much more! The Convention Center offers everything: unlimited exhibit space with all booths 10' X 10', dozens of satellite dishes outside with room for dozens more on display inside the 25' ceiling!

For full information on exhibiting or attending this TVRO Show of Shows, contact Rick Schneringer at STTI, P. O. Box G, Arcadia, OK 73007. Telephone 405-396-2574 or 405-396-2336.



# **SPECIAL! — JANUARY ONLY — SPECIAL!**

## **FREE-FREIGHT!!**

ON ALL NEW SINGLE LOT ORDERS-DEALERS ONLY. NOW IS YOUR CHANCE TO TRY THE NATIONALLY ACCLAIMED HASTINGS ANTENNA MODEL 12-PF AND GET YOUR FREIGHT PREPAID, ANYWHERE IN THE CONTINENTAL UNITED STATES. AVAILABLE AT FACTORY AND REGIONAL DISTRIBUTORS.



### **[SPECIFICATIONS]**

Diameter 12 Ft. (3.6 Meter)

Construction - Aluminum  
(24 Section)

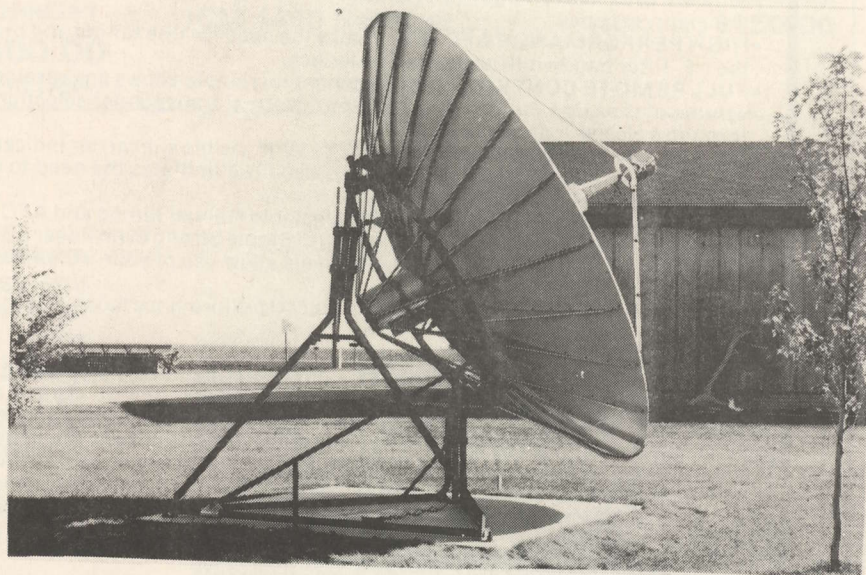
Gage - 060 3/4 Hard

F/D .375

Shipping Weight  
Antenna/Mount 580 Lbs.

### **[ANTENNA-INCLUDES]**

- Steel Polar-Mount Adjustable Offset
- Rotor & LNA Mount
- Rotor
- Feed Horn (Scalar)
- Baked Enamel Finish Antenna
- Triangle Base



Manufacturers Suggested Retail \$1995.00

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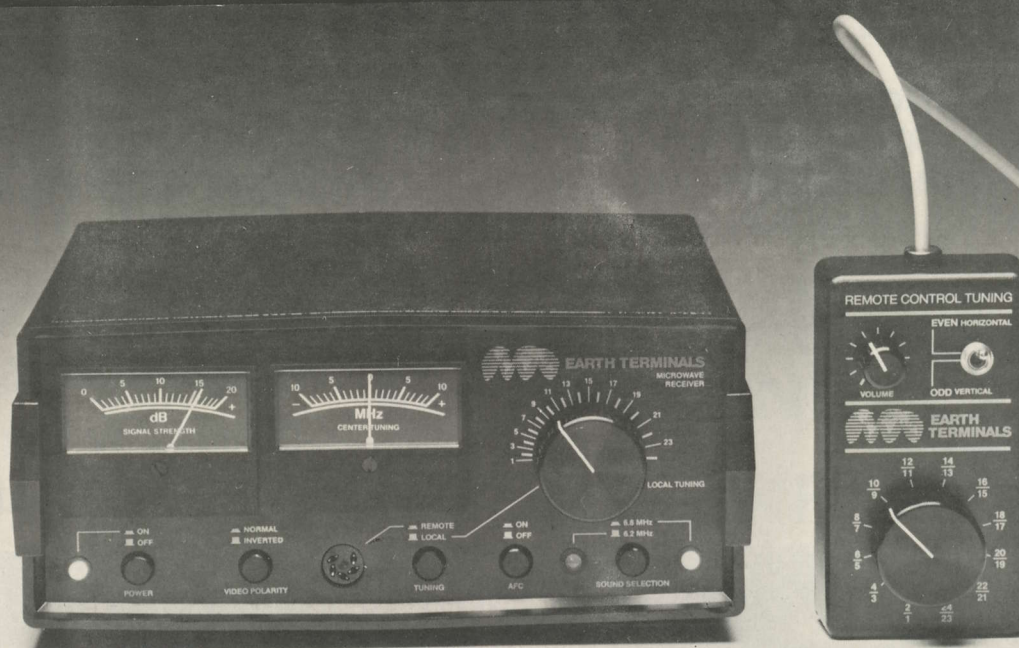
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# THE <sup>TM</sup> WASHBURN TVRO RECEIVER

## EXCEPTIONAL PERFORMANCE

- **TRUE EXTENDED THRESHOLD** - 7 dB under full video modulation conditions, achieved through meticulous attention to removing limitations imposed by components.
- **HIGH FIDELITY VIDEO** - Full 30 MHz I.F. bandwidth and 8.4 MHz video bandwidth prior to final subcarrier filtering, coupled with heavy negative feedback in all high level video stages for very low differential distortion and controlled transient response.
- **HIGH PERFORMANCE AFC** - Eliminates the need for fine tuning and provides additional dispersion rejection for full use of the I.F. filter bandwidth and superb interlace.
- **FULL REMOTE CONTROL** - 25 ft. (extendable) remote allows an untrained user to easily select transponders and control the volume of the High Fidelity Audio Output. Normal transponder selection automatically commands correct feed polarization through a closed-loop servo.
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- **FULL FUNCTION METERING** - With selectable manual tuning and AFC disable allows checks of system CNR without additional equipment. Continuous monitoring of Signal Strength (in linear dB) and tuning error (in MHz).
- **VCR COMPATIBLE** - Video and audio levels allow use of your VCR as a modulator, providing immediate recording without cable changes when desired.
- **DESIGNED FOR RELIABILITY** - Careful cost/performance balance to insure continued quality reception.

## SUPERIOR VALUE

- **LOWEST IN-PLACE SYSTEM COST** - "Bargain" receivers stop being a bargain when you add up the antenna and LNA costs for sparklie-free reception with higher thresholds.
- **USER ACCEPTANCE** - Compact, pleasant packaging, easy operation, and high performance with small antennas suit it to homes and neighborhoods where "experimenter's" equipment would be unacceptable.
- **VERSATILE** - Easily reconfigured for shared use of a single ortho antenna by multiple receivers and homes.
- **SIMPLIFIED INSTALLATION** - Separate Demodulator Console, Downconverter, and Rotor Control Assemblies eliminate routing (costly) hardline through finished rooms and allow easy relocation of the control point.



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## Introduces the MODEL 12K SYSTEM...

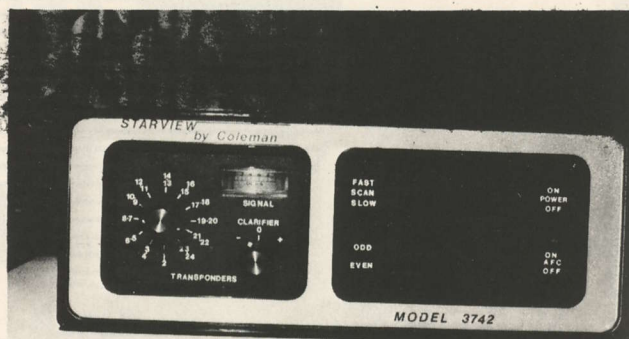
A complete home satellite receiving system that you can assemble yourself as a week-end project.

Why spend \$7,000 to \$10,000? Why pay someone else to install it? Do it yourself in a week-end and save.

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| • 12' Antenna          | • All Miscellaneous Cable |
| • AZ/EL Mount          | and Connectors needed     |
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Scan-tuned, multiple audio sub-carriers, local or remote control, superior threshold performance, full metering, double conversion of course. And available exclusively from Starview Systems. In stock for immediate delivery.

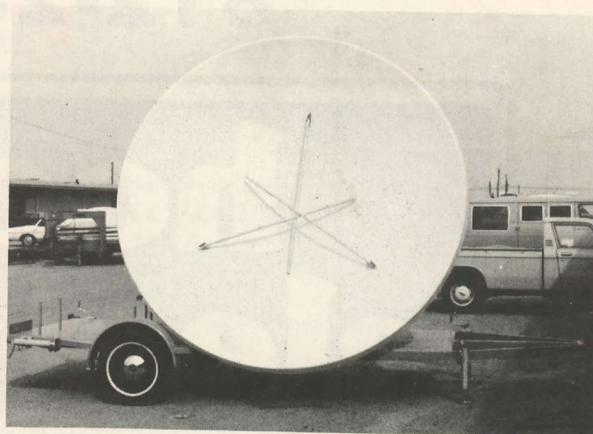
## LNA Super Sale - Continues!

120° Avantek LNA .....	575.00
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## New Low Pricing

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Get in on the ground floor as a TVRO dealer in your area! Starview Systems provides you with everything you need; professional instruction plus the finest mobile sales terminal on the road today. Included is a 10 foot Starview parabolic equipped with rotating feedhorn, Avantek 120 degree K LNA, top of the line Starview 24 channel tuneable receiver, 75' of coaxial and connection cables plus a trailer to get you to the demo site and operational in 30 minutes time. And the price? An unbelievably low **\$4800.00**

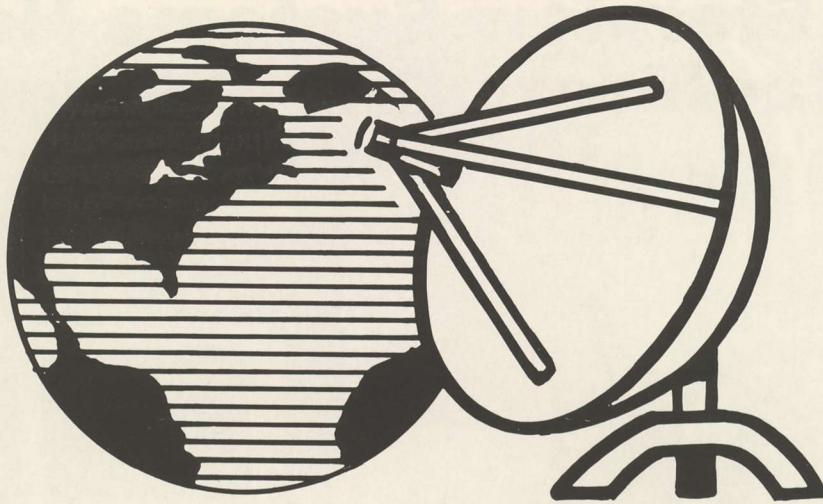


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Beige in color, this new state-of-the-art method makes the reflecting surface highly accurate and consistent. This precision compression molding process features interlocking, interchangeable segmented panels that simplifies handling and field installation. You spend less to ship them. It cost less to install and there are no maintenance costs. Immediate delivery, component pricing available.



**10 Ft. Hand Crank \$1,969.00**

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### COMMERCIAL GRADE PERFORMANCE

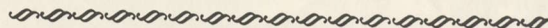
**10 Ft. 40.1 D. B. Gain**

**12 Ft. 41.7 D.B. Gain**



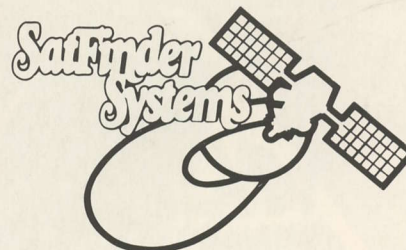
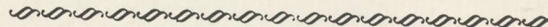
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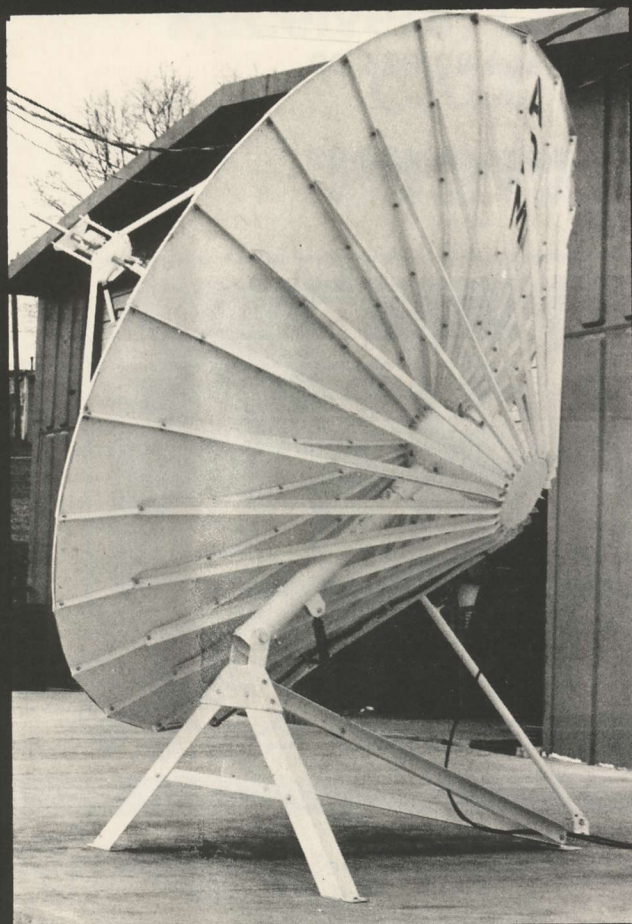
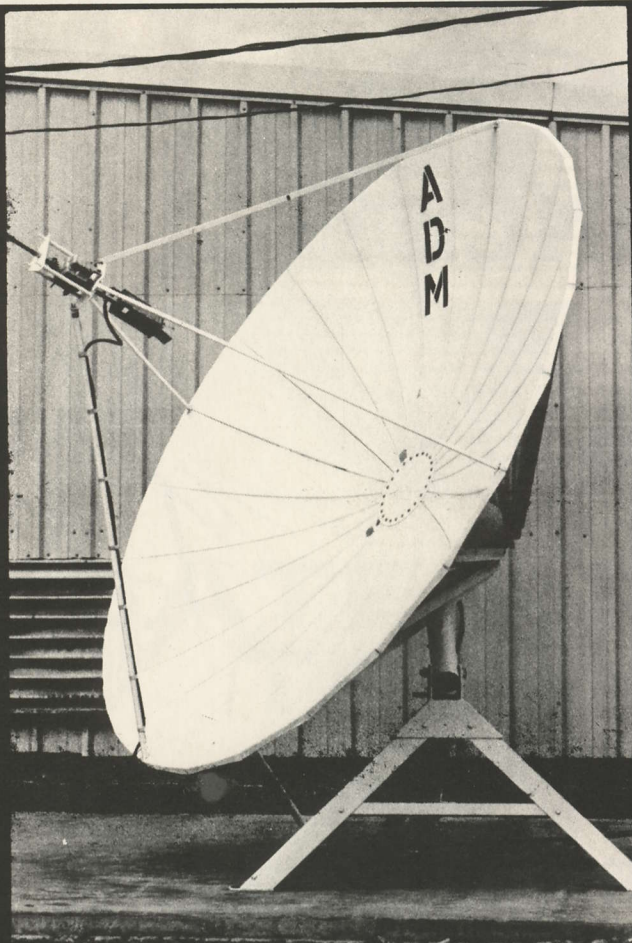
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**A SUPER TVRO ANTENNA SYSTEM.** High quality panelized aluminum 11 foot dish and steel polar mount. Dish weighs approximately 200 pounds, mount 265 pounds. Precision designed, easy installation, zinc chromate base primed and heavy duty white top finish. The rotating feed is standard! Easily shipped and installed. Choice openings for dealers and distributors.



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CAN-5 Audio Filter Board  
Eliminates Canadian Jingle!

**NEW!**  
AVCOM's SUPER SENSITIVE  
SIGNAL STRENGTH METER!

Peak your antenna to the  
last 1/10 of a dB.

Remote Control  
Capability

Modular  
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Image Reject  
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Scan-Tune

Up to Six Audio Subcarriers

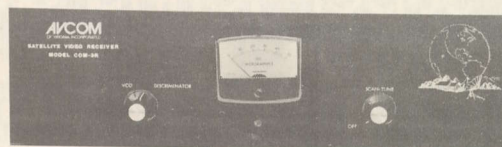
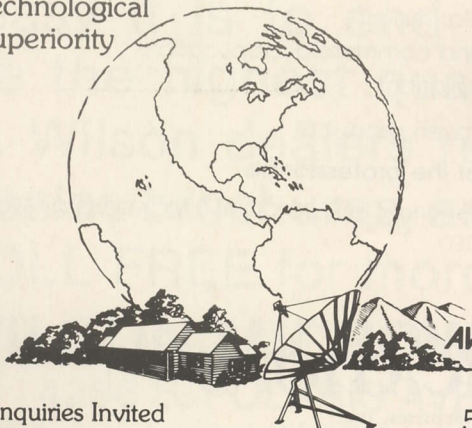
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LNA Power via Coax or Rear Panel Connector

Super Sensitive Signal Strength Meter  
with jack for remote meter

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**COM-3R complete with REMOTE CONTROL UNIT**

Everything you need for your complete  
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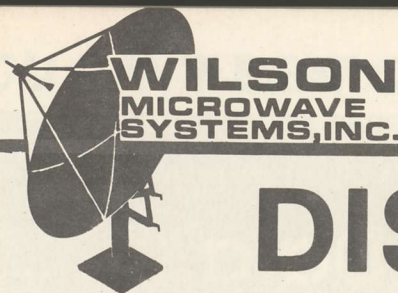
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- ★ LOWEST PRICES
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- ★ NATIONAL ADVERTISING
- ★ DROP SHIPMENTS

If your present source is lacking in any of these areas, then you should contact **Wilson Microwave**.

If your present source is having shipping delays, or does not offer you an exclusive area, contact **Wilson** - you'll be glad you did.

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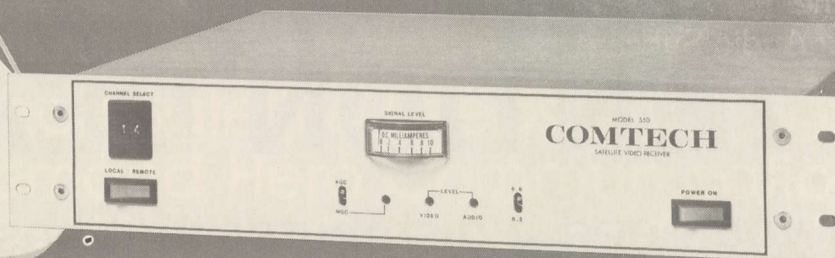
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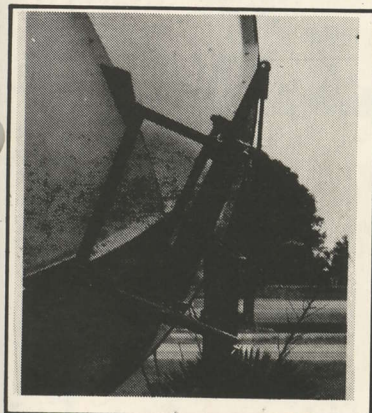
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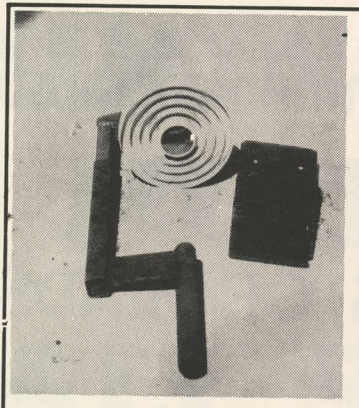
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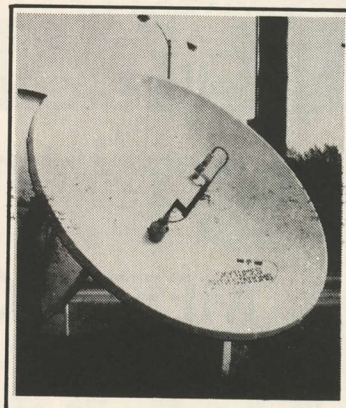
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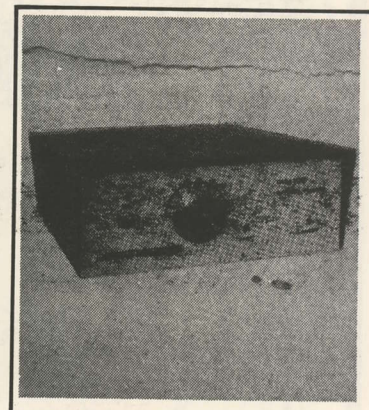
**POLAR  
MOUNT**



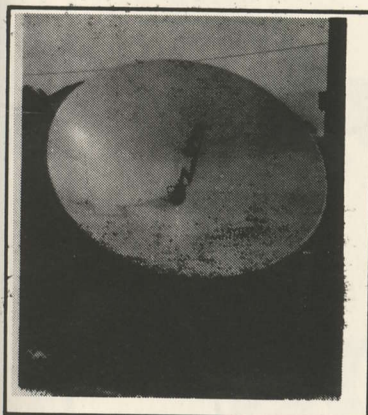
**LNA  
SCALER FEEDHORN**



**LNA  
MOUNT & ROTOR**

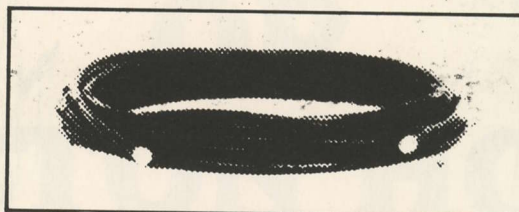


**GLR-500  
RECEIVER**

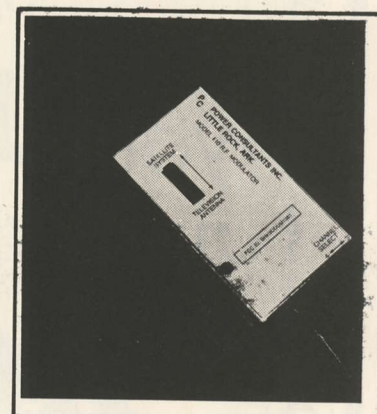


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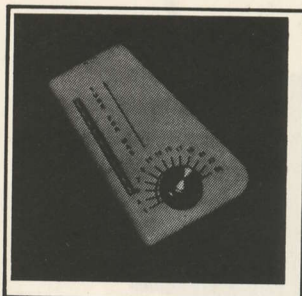


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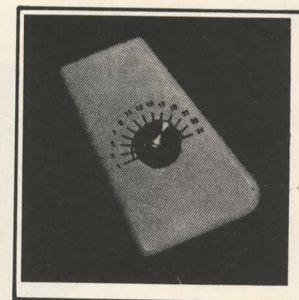
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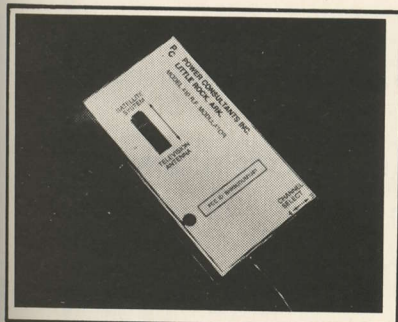
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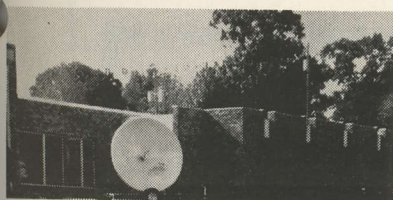
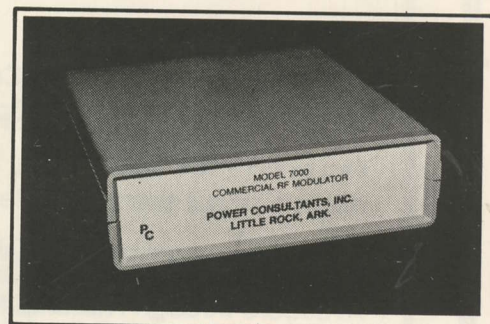
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**1** **WU WESTAR 3** (91°W)

Polarization: All Horizontal

TR-3(3)	HUGHES SPORTS NETWORK—sports events feeds (6 2 6 B)
TR-3(5)	OCCASIONAL TRANSMISSIONS—sports events, news & network feeds (6 2 6 B)
TR-3(9)	OCCASIONAL TRANSMISSIONS—sports events, news & network feeds (6 2 6 B)
TR-3(11)	CBS Network Contract Channel—live-taped network feeds (6 2 6 B)
TR-7(13)	ROBERT WOLD COMMUNICATIONS—occasional transmissions, sports events, news & network feeds (6 2 6 B)
TR-8(15)	SELEC TV—STV feed, first-run movies, concert specials, & sports events (6 B)
TR-8(17)	BIN (Spanish International Network) (6 2 6 B)
TR-10(19)	UNIVISION—international Spanish programming (6 2 6 B)
TR-11(21)	SPN (Satellite)
TR-12(23)	ABC Network
TR-13(25)	CNN (Cable)
TR-14(27)	EWTV (EWTN)
TR-15(29)	STUDIO 1

### ATT/GTE COMSTAR 3

TR-1 NBC News

Numbers appearing in parentheses indicate actual dial position.  
Numbers in parentheses indicate particular service.

**SATELLITE CHANNEL CHART**

NOV/DEC 1981

**WU WESTAR 1** (99°W)

Polarization: All Horizontal

TR-1(1)	OCCASIONAL TRANSMISSIONS—sports events, news and network feeds (6 2 6 B)
TR-3(3)	Verhouse Entertainment Television—adult oriented programming (6 B)
TR-5(5)	SIGNAL TRANSMISSIONS—sports events, news & network feeds (6 2 6 B)
TR-6(11)	OCCASIONAL TRANSMISSIONS—sports events, news & network feeds (6 2 6 B)
TR-8(15)	PBS (Public Broadcasting) schedule A programming (6 B)
TR-11(21)	PBS (Public Broadcasting) schedule B programming (6 B)
TR-11(21)	PBS (Public Broadcasting) schedule C programming (6 B)
TR-12(23)	PBS (Public Broadcasting) schedule D programming (6 B)
TR-12(23)	PBS OCCASIONAL FEEDS (6 B)

### ATT/GTE COMSTAR 2

TR-1 OCCASION

TR-2 OCCASION

TR-3 OCCASION

TR-4 OCCASION

TR-5 BRAVO (News)

TR-6 NCN (News)

TR-7 ESCAPE

TR-8 THE PLAYS

TR-9 OCCASION

TR-10 OCCASION

TR-11 OCCASION

TR-12 OCCASION

TR-13 OCCASION

TR-14 OCCASION

TR-15 OCCASION

TR-16 TBN (Trinity)

TR-17 HOME BOX

TR-18 OCCASION

TR-19 OCCASION

TR-20 OCCASION

TR-21 OCCASION

TR-22 OCCASION

TR-23 OCCASION

TR-24 OCCASION

**SATELLITE CHANNEL CHART**

NOV/DEC 1981

**5** **Audio Services on SATCOM 1**

TR-2	SATELLITE RADIO NETWORK (6 2)
TR-3	SATELLITE MUSIC NETWORK—Popular music (5 58.5 76 stereo)
TR-4	SATELLITE MUSIC NETWORK—Country music (5 94.5 12 stereo)
TR-5	WFM (FM), Chicago (6 345 48 stereo)
TR-6	Bonnie's "BEAUTIFUL MUSIC" (7 381 7 56 stereo)
TR-7	Sunday "LIFESTYLE" Music (7 600)
TR-8	MOODY BIBLE INSTITUTE RADIO (5 58.5 76 stereo)
TR-9	CONTINENTAL BROADCASTING (5 345 48 stereo)

### ATT/GTE COMSTAR 4

TR-20 OCCASIONAL TR

WU WESTAR 2 (123°W)

TR-3(3) OCCASIONAL

TR-3(5) INDEPENDENT

RCA SATCOM 2 (111°W)

TR-8 NBC Network

TR-9 AMERICAN FC

TR-11 OCCASIONAL

TR-13 LEARN/ALAB

TR-23 ALASKA SAT

TR-24 ALASKA SAT

ANIK 2/3 (Canadian)

TR-1(1) SCTV (British Co

TR-3(5) Daily Live Co

TR-4(7) CHLY-TV, (S)

TR-5(15) CHLY-TV, (S)

TR-10(19) CTV-TV, (S)

TR-12(23) Daily Live Co

TR-13(25) CTV NORTH—

ANIK B (Canadian)

TR-4(7) OCCASIONAL

TR-5(11) CBC NORTH—

TR-7(13) OCCASIONAL

TR-8(15) CBC French C

TR-9(17) CBC OCCASIO

TR-10(19) CBC (English)

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Vol. 1, No. 6 NOV/DEC 1981 Issued 11-1-81

### RCA SATCOM 1

TR-1 NICKELODEON—children's programming (6 B)

TR-2 ARTS (Alpha Regional Television Service)—performing and cultural arts programming (6 B)

TR-3 PTL (People That Love)—religious (6 B)

TR-4 WGN-TV, Chicago—Midwest's leading independent station (6 B)

TR-5 THE MOVIE CHANNEL—old first-run movies (6 B)

TR-6 WTBS, Atlanta—Test Turner's Superstation (6 B)

TR-7 ESPN (Entertainment & Sports Network)—24 hr/day sports (6 B)

TR-8 CBN (Christian Broadcasting Network)—religious (6 B)

TR-9 C-SPAN—live coverage from the House of Representatives (6 B)

TR-10 USA NETWORK—professional sporting events, College and the English Channel (6 B)

TR-11 BET (Black Entertainment Network) (6 B)

TR-12 SHOWTIME (West)—first-run movies, entertainment specials (6 B)

TR-13 MTV (Music Television)—Pop/Rock Video (5 B & 5 62 stereo)

TR-14 SHOWTIME (East)—first-run movies, entertainment specials (6 B)

TR-15 HBO (Home Box Office) (West)—first-run movies, sports & entertainment specials (6 B) (first-run, fully operational)

TR-16 CNN (Cable News Network)—24 hr/day news (6 B)

TR-17 OCCASIONAL TRANSMISSIONS—sports events, news & network feeds (6 2 6 B)

TR-18 CNN B (Cable News Network second service) (est. 1-1-80)

TR-19 SHOWTIME (Spain)—occasional network reruns and sports events, feeds (6 B)

TR-20 AETN (American Educational Television Network) (6 B)

TR-21 CMN (Christian Media Network)—religious (6 B)

TR-22 NAT (National Jewish Television)—religious (6 B)

TR-23 WOR-TV, New York—the Big Apple's top independent station (6 B)

TR-24 REUTER'S MONITOR SERVICE—commodity/stock market information (digital video)

TR-25 GALAVISION—the best in Spanish oriented programming (6 B)

TR-26 SPOTLIGHT—first-run movies, concert & entertainment specials (6 2 6 B)

TR-27 HOME BOX OFFICE CINEMAX (East)—time structured HBO (6 B)

TR-28 HTN (Home Theatre Network)—quality P and PG movies (6 2 6 B)

TR-29 THE WEATHER CHANNEL (est. Spring 1982)

TR-30 HBO (Home Box Office) (West)—first-run movies, sports & entertainment specials (6 B)

TR-31 MSN (Modern Satellite Network)—general entertainment (6 B)

TR-32 BETA—programming for women (est. 1-8-82)

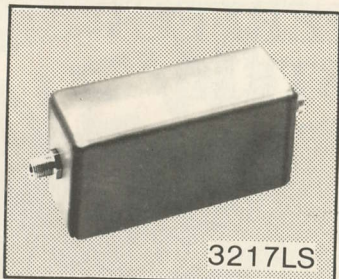
TR-33 HBO CINEMAX (West)—time structured HBO (6 B)

TR-34 HBO (East)—first-run movies, sports & entertainment specials (6 B)



# EARTH STATION FILTERS

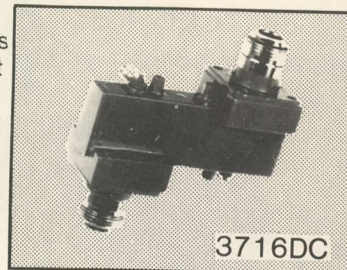
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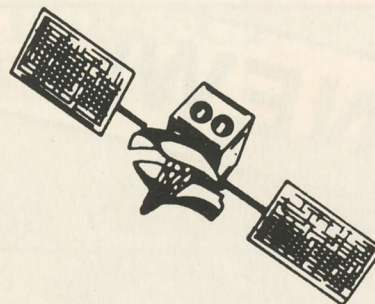
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## COOP'S COMMENT ON PROGRAMMING

### PAYING UP FRONT

Since the day the first home terminal hardware was sold to the first buyer at an SPTS event, people have been asked to put down some or all of the sale price "up front". In recent months this trend may have turned around a bit, but paying up front is still a way of life for many suppliers.

There is nothing really wrong with this practice provided the supplier can, will, and does deliver the product purchased in a timely fashion, and, the product performs properly after delivery. Most of the dealers and distributors understand that when you are starting up a new high technology business, and are "bootstrapping it" in a small start up way, pre-shipment -funding from the buyer is not out of line. The other side of that coin is, of course, that the dealer / distributor may well be in the same position and he may not have the funds readily available, unless he is tapping the ultimate consumer for an up-front payment as well. The passing of the buck starts at the consumer, and one pre-supposes the consumer would not be a consumer if he did not have the dollars available for the purchase.

**What we are doing**, on the "receiving end" of the satellite system, is small potatoes compared to what the big boys are doing on the other end. Case in point. In mid-November RCA set aside seven of their RCA SATCOM F4 transponders and "auctioned" them off to the highest bidder. In an hour or so RCA took in \$90,100,000. That's a bunch of zeros. That ninety plus mil represents what they will receive for the life of F4 with seven of the 24 available transponders. Yes, that suggests that if the same proportional numbers hold, F4 will be worth nearly \$300,000,000. And that is a bunch of zeros also.

The whole concept of selling or auctioning off transponders, to the highest bidders, is a relatively new one. It began this summer when Hughes said that is how they intended to fill up their 1983ish Galaxy One bird. There has been a bit of flack within the programming and uplink industry as to whether or not any satellite owner can sell off a transponder at all. The FCC rules are unclear on this fine point, since they were drawn up long before satellites. The conservative view has been that the common carrier (RCA) has to own the transponders themselves, or they cannot be judged to be providing a common carrier service. The free-thinking view is that RCA is selling only segments of a total system, that full **control** of the segments remains with the operator of the total system, and that if push came to shove RCA could enforce its FCC license as a common carrier by slapping the wrists, or shutting down the transponder, of a deviate user.

This is another one of those situations where the technology and all that follows it has been far ahead of the FCC's ability to understand, and then cope with, the developments. When Hughes first put their transponders on the block, most people figured the FCC would squash the plan before it got started. But the Commission did nothing, and their silence was taken as permission to continue. And so SPACENET and RCA joined the crowd selling off transponders.

What a buyer is getting, in return for his big dollar pre-payments, is a guarantee that he will have use of a particular transponder for the life of that transponder. What RCA gets is all or most of its anticipated revenues up front. That sure pays off a \$30,000,000 satellite and a \$30,000,000 launch in a big hurry!

With these big dollars involved, this is a very clever way of funding a corporation's activities. RCA and the rest who follow this path will have the use of large sums of dollars in front. They will also be able to beat corporate borrowing in the process, and with interest rates where they are, the savings on interest to them will probably amount to more money than the actual receipts they got from the sale.

There are complications however. When RCA clearly owns each transponder on a bird, and the users are simply renters, RCA is able to insure the successful launch and long term operation of the whole package with a single insurance agent. With the transponders now legally the property of others, each of the new owners must not only pay big bucks for his transponder, but he must also arrange for and pay for his own insurance. To not insure the seven year (minimum) life of a satellite transponder is foolish; especially after you have paid \$13 to \$15,000,000 for its use.

**Paying up front**, then, for the various bits and pieces that go into the 1982 version of the modern satellite system, has become a way of life. It stretches from the very bottom of the ladder, us in the fields, to the very top of the pyramid. When a manufacturer asks you to pay some percentage of your next order down, in front, just be happy that he is not asking you pay for seven year's worth of product all at once!

CSD

PROGRAMMING



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## WIV-TV4 ONE YEAR LATER

### BACK ON THE BEACH

The ongoing "saga" of bringing first time 20th century communications to a forgotten corner of the globe is now just over one year old. In the early days of this adventure, we ran a continuing series of reports on our experiences, hopeful that they would serve as an incentive to others to attempt their own pioneering efforts. The "value" of the series diminished however this past spring and we left the story with the television expansion underway.

For those who have joined us in the interim, this brief background. The Cooper family spent several years researching remote corners of the world, looking for that "perfect" spot to live. There is no such thing as a perfect anything of course so you make allowances for what you can live with, and what you cannot live with. We determined early that we could not live without some connection to the real world, and television seemed like the logical "cord" to keep us in touch.

**The Turks and Caicos Islands** are some 650 miles south-east of Miami. There are hundreds of islands here but only 8 or 9 have people living on them. No more than 7,000 people live in the entire country, which is scattered across the northern Caribbean in a swath nearly 100 miles east and west and perhaps half of that north and south.

We moved here with **no interest** in providing television service to the islands. There was none here and the only local radio is an AM station operated by the government, on an irregular basis. We did specify, as we made application for our construction permit, that we would have "some antennas" scattered about the property. It took only a short time for the government to figure out what the funny "satellite dish antennas" were for, and before we knew what happened, we had been talked into "sharing" our satellite reception with the rest of the country.

We found no real communications law in place, so we wrote it as we went along. We selected our channels, determined where and when they would operate, how much power we would use, what types of antennas and so on. There were no laws, so we could do whatever we felt was best to accomplish our goals.

Now the equipment one needs, to "share" television, over an area 100 miles by 50 miles, is considerably more complicated than one needs to simply watch satellite TV in one's home. With so many islands involved, and such great distances, cable was clearly out. Through the air broadcasting made the most sense and that is the direction we have gone. Because each island is relatively small (the largest is only 22 miles long and quite thin), we saw no need for high power transmitters. We ended up with eight transmitters, each putting out ten watts of nominal power. Four operate on VHF channel 4, and we inter-tie the Channel 4 transmitter sites by carefully linking between sites using high band VHF transmitters.

**So much for the background.** One of my first concerns was how we might pay for this operation. By disposing of our home and assets in Oklahoma, before moving, we had enough money to build a new home here. But far short of the capital needed to construct a national television system. In this small country, there is very little in the way of banking facilities and they do not "invest" in unproven enterprises. To illustrate how conservative this English banking system is, they don't make home loans either. They are not sure homes are here to stay, yet!

**So we decided to scramble the service.** That is, after all, the way viewer supported services operate in the states. Which brought me to a crossroads; turn left and you invest in a relatively inexpensive "passive" scrambling system. Turn right, and your choice is the higher priced active system.

Now in the states, where premium television systems just beg to be ripped off, the "passive scrambling" technique, exemplified by the TEST or Eagle interfering carriers, are not considered very secure. They operate by inserting an extra carrier near the center of the video passband. The carrier is modulated, and the combination of the extra carrier plus the modulation screws up the picture (and sound) for unauthorized viewers. I investigated that one and even brought an Eagle scrambler and some decoders down here. I was disappointed with the way it performed on the air. The scrambler places a rather precise (in frequency) carrier inside of the modulated signal. The descrambler removes the extra carrier. The descrambler is simply a hermetically sealed Hi-Q "trap"; a tuned, passive, electronic circuit that "sucks out" the specific frequency of the interfering carrier. The descramblers fit in the palm of your hand and require no electricity. They are simply highly selective tuned circuits. They are also inexpensive; around \$10 each if you buy a few hundred.

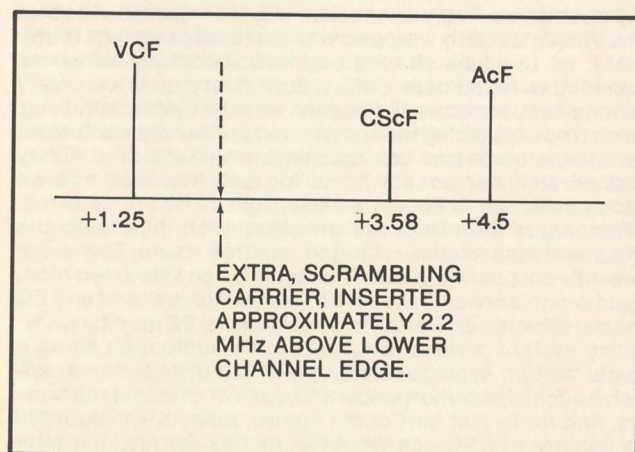
The more recent vintage scrambler (which ties to the transmitter) part of this system adds something called pre-emphasis to the transmitted signal. We are familiar with video pre-emphasis in the satellite feeds; the criteria here is the same. However, this particular pre-emphasis system adds some distortion to the input signal, and after messing around with the passive approach we decided that it was not for us. Our satellite fed signals are marginal to begin with, and any extra distortion-added only makes them worse. I may have been a nit-picker, but I didn't like the distortion I saw, and measured. So scrap the inexpensive system.

My next choice was a big leap forward; the Blonder Tongue addressable system. The cost of the scrambler portion of the package jumped from around \$1200 to over \$18,000. And that was just the beginning. Next you have to add a high grade time base corrector (TBC) to insure that the video sync, color phase, color burst and so on are kept within very narrow limits. This is called for since the active, addressable, scrambler system looks at and references to the precise timing and phase relationships found in the video signal fed to the scrambler. Upon further investigation, the particular "grade" of TBC required looked to be another \$18,000 or so.

**Double ouch.** Then you add to this the cost of each of the descrambler devices. A "mere" \$175, plus, per home. Well, maybe there was some other way to end up at the same place.

Still, we visited Blonder Tongue and placed an order for the system. One of our anticipated problems was having some handle on bringing people in to pay for their service monthly. Once they had a **passive** decoder in their home, if they chose not to keep up their payments, we'd have to field a police force to get our descramblers back. The people of the Turks and Caicos are not dishonest, certainly. Where else could you leave a car unlocked with the keys in the ignition in this day and age? Or leave hand tools out on the job site, and not lose them overnight. But, they are only ten years or so into the 20th century. If you go back ten years here, the few "jobs" around paid 35 to 50 cents per hour. That worked out OK in their minds since there weren't any stores to sell them commodities, and they fished or grew what they ate. An acre of prime





land then sold for \$50 or so.

In the intervening ten years the US "economy" has come to the country. A good carpenter earns \$9 an hour. They no longer fish or garden for food; they shop at one of our island's two "super markets". Cars are plentiful, in spite of the \$2.15 a gallon gasoline. But, they have no history nor experience in dealing with things like credit. They jumped from a lifestyle where dollars did not exist to a lifestyle where dollars were almighty. Most have not made the full adjustment yet.

So you don't extend credit here. And the banks are largely used by the displaced Americans and Canadians who have moved here to develop this land. And giving someone a device that unscrambles their TV, even if they neglect to keep up their payments, is a good way to lose a customer. Without credit, there is no experience nor understanding in making monthly payments. For anything. TV, as a monthly payment service, is a strange, new "animal". In many ways.

Well, we waited and waited for Blonder Tongue to deliver. We waited through the spring, and the the summer. And then fall came. I decided I had a really difficult delivery problem when they stopped being "in" when I would call, to inquire about my place in the delivery cycle.

When we returned from Omaha, Susan and I made a decision. We had been supplying 24 hour per day television for nearly one year, **without charge**. This required that we "tend" the full facility, with all of the island-scattered transmitters, fulltime. That's 24 hours every day, without letup. We analyzed our position carefully. We had the Eagle system on hand, but while it would work the first month, we'd be out traveling island to island day after day trying to collect for arrears service fees, or, trying to get our passive descramblers back. Not a good idea. We could continue to give the service away, but the monthly electricity was now running over \$600 and as the equipment ran fulltime, we found our maintenance bills averaging more than \$3,000; per month. This was a good way to go broke in a big hurry.

So we announced a dual subscription/support program, to become effective on October first. We went through the day's 24 hour schedule and cut it down to a bare minimum. Four hours per day. We decided we would stay on the air at least for four hours daily, provided we got **some** advertising support. Then we carved the day (basic four hours plus additional blocks of a few hours each) into sponsorship segments.

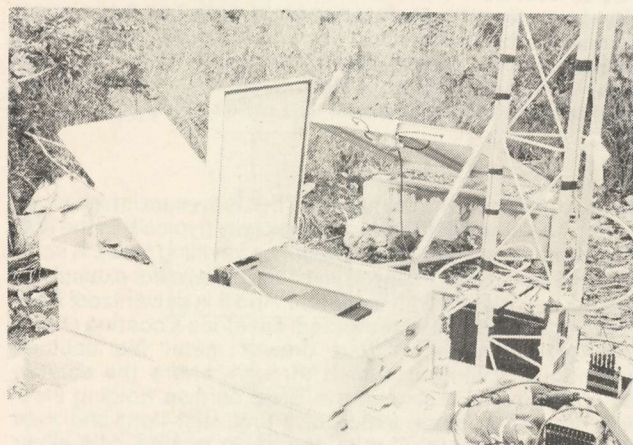
There are perhaps 20, real, live businesses now on **our island** base of Providenciales. I thought we might end up with five to seven of them agreeing to sponsor program "blocks". I was pleasantly delighted when with only modest over the air announcements, we heard from 12 of these the first week. By the time we got to the first of October, 14 of the Provo businesses were on the air with sponsored program blocks or commercial messages. Well, that covered the electricity and part of the maintenance anyhow.

Our economic base here is far too small, however, to support even a breakeven operation on advertising **alone**. So, lacking a scrambling system we could live with, how do you get people to pay for the service?

I went on the air. Kevin and I produced a one hour epic that explained in very simple terms how television systems operate; their economic base for operation, not the technical operation. I explained that television is paid for one way or another; either by advertising support (so called "free" television), or by the viewers. I noted that in our closest major US center, Miami, **each** of the three network television stations average an annual gross from advertising of nearly \$110 **per** family in their coverage area, **per year**. And, that this "advertising cost" is passed along to everyone in the area through increased costs for goods and services. Then we announced that we had to have both advertising **and** viewer support, or there would be no television. Specific shows, our twice per week wrestling for example, would be televised **only if** certain "levels" of viewer support were reached. We ran a daily "barometer" of support as viewers "signed up" at local points on each island. And we ran the names, on television, of those who did sign up.

After some teeth gnashing, we reached our first plateau with no margin to spare, and so our October television schedule went into a commercial mode. We ended up with 101 paying viewers (38 of these elected to pay for the full year, at a reduced per-month rate), and operated that full month from 7 to 9 AM and 3:30 to 11 PM weekdays. Now up to this point the operation of the station had been fairly straight forward. We did a modest amount of switching (between programming sources) each day, but inserted nothing more complicated than occasional station identifications.

With sponsors, we had a new challenge. A sponsor paying for the 7 to 9 AM "block", for example, is entitled to an opening announcement (video and audio), plus two sixty second commercials within the block, and then a closing credit/announcement. You can handle that pretty easy, although you have to be on your toes to slip in and out of the program without making a botch of things. I initially tried video only commercials, using a character generator with many pages of memory. Several sponsors immediately asked that we do audio as well, since they were learning that many of the islanders don't **read** so well. This allowed us to go to a simple character generated static-written announcement, listing the sponsor's name, telephone number (a few do have tele-



**THE FULL ten watt transmitter is housed in this Sears Roebuck pickup truck tool box. Inside, one ten watt transmitter, a pair of 100 amp batteries, some test equipment and a switching system plus regulator for the power system. There is room to spare, and we packed a two-way radio "repeater" into the same box.**



phones!), and some catchy phrase that pushes their product or service. Then on an audio cassette I loaded up, in sequence, the full day's audio announcements. This really made life easier; you switch to the static one-page sponsor display and roll the audio tape. If the timing is proper on the audio tape, you come out of the announcement with a few seconds to spare, and neatly switch back to the satellite feed. And then the Shintron character generator, now two years old, developed a case of faulty memory. It would be sitting there displaying the proper message when, with no advance notice, it decided to flip to another page. As luck would have it, this happened just two days prior to a visit by Susan and I back to Florida. Naturally, I would take it back with me to Florida for shipment back to Shintron. Alas, the evening before our departure, the character generator quit acting up. It would stay on Provo, for now, but a backup for the machine was certainly in order. That's one of the things we learned early down here. There must be at least one backup for anything that you depend upon. And as you might suspect, this increases substantially the amount of money invested in the system as a whole. Because this is a small island, we don't have that unbearable high humidity that many of the neighboring (larger)



**THE SOLAREX panels we use have held up very well. Our cost for the panels, regulator and batteries was around \$1500. That gets us in excess of 30 amps per day (at 12 volts) to work with. Maintenance to date has been zero; we inspect the installation once per month, but monitor the output of the transmitter fulltime with a field strength meter connected to an antenna, at the control room/satellite receiving site some 4.5 miles away.**

islands experience. But the humid air that is present is high in salt content. The combination of some humidity (typically in the 40% range), and the salt laden air is death on anything metal. A small Rohn 25G type tower, installed just one year ago (for example) is already chalky white with oxidation. And it is galvanized! Bare metal, unpainted and unprotected, develops a coating of rust seemingly overnight. A four drawer metal file cabinet, scratched in shipment, rusted through where the scratch took off the paint in six months. Steel screws, holding electronic chassis in place inside of a unit, rust tight and then begin to disintegrate. Plug in electronic boards, with silver plated contact points, oxidize quickly and you have to pull them out and clean off the junk every month or so. Or you lose the contacts.

After more than a year of "outdoor operation", we have learned that you can protect the equipment that is actually outside against moisture ingress. Transmitting antenna arrays, solar powered transmitting sites have been remark-

ably troublefree. Every connection is first prepared with great care. Then it is tightly wrapped with plastic tape several times. Finally, we use tube after tube of bathtub caulking compound to seal the taped-over connection. Every bolt on every antenna array and tower is "sealed" with the bathtub caulking. We started out placing the remote transmitter site equipment into pickup truck tool box housings; the metal kind. Every small scratch becomes a home for rust, however, and we quickly switched to fiberglass housings.

**The major maintenance problem**, then, has been the equipment associated with the control room. There are presently six operating satellite receivers on video, two more in audio-only service. There are three "switchers" and an SEG (special effects generator), five tape decks, 22 monitors, a ¼" editing system, a video proc amp, three audio proc amps, a master station sync generator, six video distribution amps, twelve audio distribution amps, and a pair of character generators. And that's just part of the control room. Kevin counted the number of BNC connections one day, for me, and after reaching 300, stopped counting. When you add those 300 + connectors to all of the RCA connectors, and a smattering of miniature audio jacks and plugs, there are at least 500 connections in the control room alone! And more than 2,000 feet of RG-59/U and audio cable. RCA plugs, in particular, are a pain in the neck. Some fit very tightly, some fit very loosely. There is no quality in RCA type plug manufacturing tolerances, especially on the pre-made-up 3 to 12 foot jumper cables you purchase in local audio stores. We finally got control of this problem by wrapping every RCA connection tightly in plastic tape, forcing it to "seal" shut, and keeping the salty air out.

Solderless BNC fittings are another story. AMP Industries makes a fitting that crimps into place. You can prepare such a fitting in a minute or so, while soldering up BNC fittings is good for ten minutes or more; plus lots of frustration. The AMP fittings are uniform, RG-59/U is not. On some cable, the solderless center pin slides over nicely, a snug fit. On most cable, however, the center pin either drops on, not tight at all, or, you can't force it on until you "shave" the center conductor wire with a pocket knife. The crimped-on-fitting is not mechanically stable, in any event, and mechanical instability leads eventually to electrical instability. The solution to this one is to take more plastic tape and very tightly force-wrap the fitting after crimping it. After adopting this final touch to installing BNC fittings, we eliminated that problem.

**Push button make and break contacts** are a particular problem here, if they are not encased. Our 3M 10 channel audio-follows-video and our pair of Lenco 12 channel audio-follows-video switchers use push button contacts. Each is a professional piece of gear, and to date we've had no problems with their operation. Other units, such as a Kenwood stereo amplifier, used in audio production have not held up as well with the same type of **non-sealed** switches. Again, the salty air is the culprit, and we have to clean the contacts weekly or run the risk of noisy audio switching.

If there is one continuing problem with the operation, it is the sync. It comes **with** the satellite signal, and if it is reasonably clean, your picture is stable. Synchronizing signals are sent out as an integral part of every signal transmitted. In a sense, you can think of the sync signals as a "transportation director"; they tell the intelligent part of the signal where to go and how to get there. Many of the sync signals you find on satellite do not, however, end up on the air. That is, they are **replaced** at the local station with station generated sync signals. In this case, the satellite sync signals are used as a reference, and the local station replaces that reference with their own reference.

When you have exceptionally clean satellite signals, in the 50 dB signal-to-noise region and up, you can take the incoming signal and feed it directly into a master station sync generator. If the master sync generator has a "genlock" provision, it will "lock onto" the sync of the incoming signal,



and then create station sync that will feed all of your equipment referenced against the incoming signal. When you have less than perfect pictures, such as video signal to noise ratios in the under 48 dB region, this is a dangerous game to play. Sync is easily distorted by noise and it takes just a small amount of noise to fool the genlock circuits.

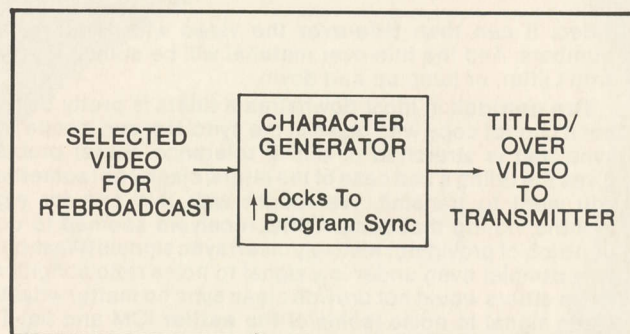
When you are selecting multiple video sources for broadcast, there must be a compatibility between them. That means the sync of one must be virtually identical to the sync of the others. You can "switch" from one source to another, with only minor video glitching, without complete harmony between the sources; modern "switchers" operate on something called the "vertical interval" system. That means that when you push a switcher button to select a new source, the



**TO MIX the concrete pad for the piers for the solar array, we hauled concrete, sand and water to the hilltop.**

switcher's internal circuits **delay** the actual switch to the new source. The delay cannot be seen because we are dealing with microseconds, but it is important. The switcher "holds" switching until there is a "vertical interval" period in the TV field; a short period when no actual video is being transmitted. In this way the switch "looks" clean (i.e. no roll, flip or click) even if it is not really "clean".

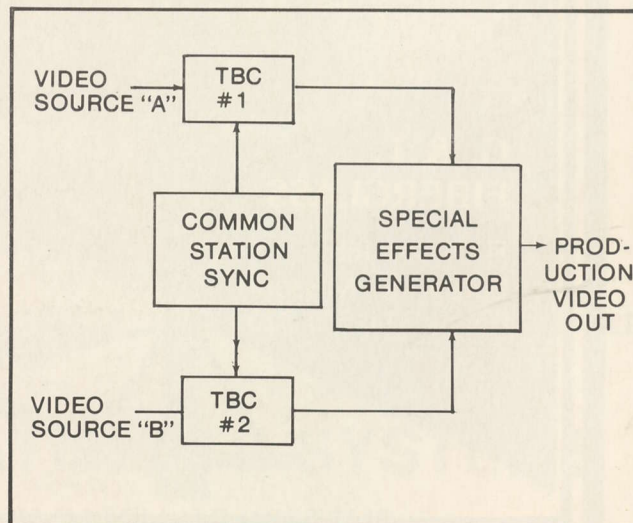
**But while you can "switch"**, without complete synchronization between sources, you cannot **mix** or **title** over video that is "out of sync" with each other. Mixing two video signals, from two separate sources, is a nice touch, but hardly necessary when you are operating in a "market" with perhaps 350 television homes. To do it properly, you have to insert a device called a "Time Base Corrector" on **each** input signal, and then drive the TBC from a common (station) sync source. This in



effect "strips" the sync signals from both inputs, and replaces the original sync signals with a common, station generated sync. When you have two video signals with the same sync reference, you can then do clever things like splitting the screen and "wiping" from one source to the other. This sounds and looks neat, but it doesn't buy you anything in a small market like ours, so we dropped that from active consideration, early.

However, we use the devil out of our character generator equipment. Our commercial announcements are static displays plus audio, and, we like to "crawl" messages across the bottom of the screen frequently to pass along messages and announcements. Virtually every week here some idiot runs a yacht fresh out of a Miami boatyard into one of our island-surrounding-reefs; or someone in a small one or two engine plane runs out of fuel and ditches at sea near us. This brings out the local rescue guys who delight in spending the whole night flying patterns and looking for survivors. The television station is a medium of calling for volunteers, or issuing advisories of where help is needed, and by whom. Our character generator system, then, is the mechanical arm of this activity.

Character generators, to insert lettering and numbers "over" the video present, must somehow "lock" to that video. You can do this by locking the character generator to the master station sync, **provided** your signal to be "titled over" is also locked to that same sync, or, you can insert the character generated video "over" in something called a "downstream" configuration. The latter means that after you have done everything you normally do to the video, you loop the video signal on the way to the modulator/transmitter **through** the character generator. If the machine is designed for "downstream" use, it "genlocks" to the video/sync present in the signal fed through it. Once "locked to" the feed-through





video, it can then **title-over** the video with lettering and numbers. And the title-over material will be stable; that is, it won't jitter, or jump up and down.

The **genlock** in most downstream titlers is pretty decent, but it cannot cope with noise in the sync. Nor can it cope with sync that is stretched or out of tolerance. Either problem gives the titling a bad case of the jitters; clearly not something you want to transmit. We fought with this one for eight months, noting that some TVRO receivers seemed to do a good job of providing relatively clean sync signals (Washburn, for example) even under low signal to noise ratio conditions, while others would not provide clean sync no matter what the video signal to noise (some of the **earlier** ICM and Sat-Tec receivers, for example).

We finally went ahead and tried a few of the time base correctors, still planning (at the time) to install the Blonder Tongue active and addressable scrambling system which requires a TBC anyhow. One of the top-of-the-line units is manufactured by Microtime. They say they sell them world-wide to broadcasters and networks. We had three different 2520/2521 TBC units down here over six months, and each had an operational problem. This is a huge unit that barely fits through the door of a Beech D18 plane, and each time we took one back to the states, we spent hours hassling with US customs to get it back to the factory. After the third one failed, we gave up on Microtime.

Next we tried out a Edutron ccd 2H-3 TBC. We had been advised to stay away from Edutron, since their units are **supposed to have** many technical problems. Our spirits were not high as we brought it down and plugged it in; at least it was small enough to fit into a suitcase when we had to haul it back to the states.

The Edutron unit has performed flawlessly for us to date. It has only one annoying habit; it takes a fraction of a second to "lock up" on a signal that has unstable sync, or when the sync suddenly changes. After it does, the operation is smooth and it generates new sync that allows us to use the Edutron

processed signal downstream for almost anything we wish.

All of this technical stuff aside, one learns a great deal about human nature when you set out to bring first-time television to a small area such as this. We anticipated some hostility when we switched from 24 hour per day "free" television to 10 hours per day of semi-paid subscription television. We got it. We also got a tremendous amount of local support from people who took it upon themselves to canvas house to house to sign up their neighbors.

This "country" is a tremendously small community. When you consider that we have but 7,000 people in the whole nation, and they have been in the 20th century only for the past ten years at most, you can quickly see that life here is not like downtown Hoboken. That is, of course, part of the charm of the country. The legislature meets only twice per year, and then only for a few days. It does not adopt many new laws each year; so far, there has been little need for such laws. Free enterprise and individual freedoms are the law of the land. There is a simplistic "Don't tread on me" rule in the land; do what you want, where you want, and don't worry about obtaining long, expensive approvals to start something new. Just make sure **before** you begin you won't be violating another person's **right** to do as they wish, in the process.

The impact of live television into this "community" has been considerable. For the first time, these 7,000 people now feel like they are really a part of the 1980's. World Series baseball, live international news and a wide variety of entertainment has changed their perspective on not only the world, but upon reflection, of themselves. They no longer feel isolated and alone in the outback of the northern Caribbean. This alone has made the whole project worthwhile. And we encourage others, who have the ability and resources, to seek out their own isolated locations, to bring in modern day communications. **It is a challenge** not to be taken lightly, but the rewards are perhaps greater than any financial statement can measure. Without satellites, none of this would have been possible.

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## THE YEAR THAT WILL BE (1982)

### FORCES THAT WILL SHAPE US

If 1981 was a year of maturity for the home satellite industry, 1982 will be a test of our will to survive. All of the cards are on the table during the next 12 months.

To best understand our position, as we enter the year of decision, it is appropriate to go back into the recent past and look at the forces that are trying to shape our destiny.

Laws, rules and regulations are created and enacted in Washington. The impetus for those laws, rules and regulations starts far away, however, typically in some corporate board room where one party with a "special interest" feels the need to legislate his competition, or would-be competition, into a position of weakness. The most recent "fitting example" of this occurred in the decade just passed. The industry that felt threatened was the broadcaster. The industry that was doing the threatening was the cable television industry. Ten years ago cable had the same brashness, the same esprit de corp, and the same maverick label which home earth terminal people do today.

**Cable** was busting loose from the traditional mom and pop, rural business setting into the larger cities of America. A few were already operating in communities such as Santa Barbara (CA and Wilmington (DE and NC), where local television stations were also operation. The limited, negative, experience of the local television broadcasters, after cable came to town, was enough to send shivers up and down the back of the broadcast industry. It had been proven that when cable came to town, with a diversity of television programming not available locally "off-the-air", that the local television stations suffered a drop in audience. That is not such a startling revelation of course; anytime you erase a monopoly in favor of free choice, the former monopoly is bound to lose some business. Only, **the broadcast monopolies** were in a position to **influence** Congress, and the FCC, by virtue of their unique positions of power. Politicians need and depend upon broadcast air time; especially during the election periods. Broadcasters, therefore, develop a special place in the hearts of politicians, and an "alliance" of sorts is struck. The broadcasters, individually and collectively, used this alliance to create pressures in Congress for new legislation to slow down, or better yet shut down, the growing threat of cable.

**It was** an example of the worst of Congress, at its best. One "special interest group" using the nation's law making apparatus to gain an advantage over another, competing, "special interest group". Hey, you may not like it...but that is how it works. And they never taught you that in poly-sci in school, either!

**It took cable** seven or eight years to escape from that one. From 1970 (or a tad before) to 1977-78 or so, cable growth ground to a halt. During that period of time two things happened to cable. Broadcasters bought in (they now own approximately 52% of all cable systems and nearly 70% of all cable subscribers), and, cable discovered satellites. In a sense, the broadcast industry used legislation to halt cable

growth so broadcasters could buy time...to **buy cable out**. Now **they** are in the midst of this last, great, national growth period of cable. And **they**, the people who felt threatened by cable in the late 60's and early 70's, now own cable. Or much of it.

You can see the same scenario developing in other potentially competitive areas. DBS is a prime example. At the present time the DBS proposal is merely a gleam in the eye of a handful of people. But the farsighted ones see in DBS the next "cable evolution" of communications; the next communications service to take the country by storm. And although DBS is barely alive and well, in its embryonic stage, it has already attracted the likes of RCA, CBS, COMSAT, Hubbard Broadcasting and a host more who learned their lessons well in "the cable wars", and who see the potential writing upon the wall.

**DBS will** amount to something quite substantial, **one day**. But before it does, there will be large scale attempts to stop it, stunt it, or dump it. The people doing the fighting will not expect to kill it; only slow it down enough so that they, would-be DBS participants, can get their ducks in line and allow **them** to be a part of this **next** communications revolution.

Into this 1990'ish business comes the "mom and pop" business of 1981; selling little backyard earth terminals a thousand or two a month, to anyone with the bucks to buy. The home TVRO industry of **1979**, selling perhaps 300 total terminals **per year**, posed no threat to the 1990'ish thinkers planning for DBS. Then along came 1980 and the 200-300 **per month** sales level of the mom and pop TVRO terminal business. Still not a threat, said they. Think how long it will take at 300 per month to get those expensive toys into a million homes!

Well, then 1981 hit and the number of terminals per month passed 1,000 quite quickly. More than that, some very substantial firms (SA for example) started making marketing noises in this "mom and pop" industry, and if the volume did not attract the 1990'ish DBS proponents, the likes of SA did.

To further complicate matters, the general press discovered home earth terminals during 1981. The press was attracted was far greater than our modest numbers would call for. But the placement and frequency of the press stories made it appear that we were taking off like a shot. That forced people who were prepared to ignore us, for several more years, to call their attorneys and to start the lobby and legislative and regulatory wheels against us, rolling.

Which brings us to 1982. The year of decision for the "mom and pop" home TVRO business.

**Threat Number One:** Legislation. A federal law (the Waxman Bill is the **present** form we see) which will somehow make it illegal, immoral, fattening or all three to own, use or sleep with a home earth terminal in your backyard.

Congressman Waxman is from the Hollywood area of California. His people, the guys and gals who contribute big bucks to his campaigns, are in the motion pix biz. They don't like the idea that you and I are not paying to watch their flicks. Or that we have the ability to "crash their gate" without paying, whether we actually do it or not.

**Motion picture people are paranoid** about their gate. And probably for good reason. Their product, the movie, is not a very self-protecting product. It wanders around the countryside traveling from theater to theater. It is manipulated, mechanically, by people who are paid at the bottom of the wage scale. It is much desired and much sought after, and there are dozens of opportunities each day for somebody to "rip it off". The motion picture producers and owners have long found that their in-field accomplices, the theater operator and their personnel, are not to be trusted. Somebody is **always** stealing an illegal copy of their product. The motion picture folks even field their own private police force to guard against theft.

**Now**, here we have their product floating around **in the air**, coming down out of the sky, in such a form that somebody with a few thousand extra bucks to spend can rip off several



**THE YEAR - We Won't Forget**

I remember well the day I installed and turned on our first satellite terminal dish, in 1976. A chap named Stormy Weathers (President of US Tower Co.) was on hand as we did the final adjusting prior to firing up the electronics. Stormy sat on a ladder at the feed, playing with the LNA-feed spacing from the dish surface. **"That ought to do it"** he said, smiling. **"Now you guys turn that azimuth turnbuckle about four turns to the counter-clockwise and then turn on the receiver"**. Now mind you, Stormy had promised we would have F2 pictures by 7:30 PM. He also had told me that when we turned on the electronics, there would be pictures there. That's a neat trick with a six meter antenna, set up in a location where no dish had been before, and you are seemingly shooting from the hip with your azimuth heading; even assuming the elevation is dead on.

I turned on the receiver, pre-set to transponder 6. And fell off the stool I was leaning against, because there was WTCG (the former call letters for WTBS), bright as day. Stormy just smiled again; not the smile of the cat that swallowed the mouse, but more the smile of a man who knew he was going to do it all along. The picture was perfect but we wanted to "peak it" anyhow. No way. It was dead on. **And it was 7:29 PM.**

I am not likely to forget that day in my life. I doubt very many of you will forget the year ahead. This is going to be **the year** that makes, or breaks us, as an industry. **This will be the year** that proves whether we have a new-technology industry here, or simply a bunch of guys playing around while the sheriff is out of town.

In this issue of CSD we look at both the year that was, and the year that is now here and will be. Everything we now know, accept, and depend upon, is under fire in 1982. Before the year is out, we'll have two new SATCOM birds loaded with cable TV programming. Some of it **will be** scrambled, before 1983 dawns. We'll have two new WESTAR birds, loaded with cable TV and other "specialty" program services. We'll see all three major US networks sending large chunks of their full day program schedules up on COMSTAR D3. And we'll be tweeking our dishes to the 50 degree west region to see what INTELSAT is offering to the Americas each day.

But all of that is superficial kind of change, when compared to the legal battles coming up. **We** have no crystal ball; **we cannot tell you** precisely when, where or who will be hit with a monster law suit filed by the movie and programming folks. But we can assure you that it will happen. It may even turn out to be a "class action suit" in reverse, naming one or two specific installations and then tens of thousands of John Does. That's you and me. Nor, can we tell you how the Waxman legislation, designed to make virtually any private terminal viewing illegal (and punishable by huge fines and terms in the pokey), will turn out. Because its victory, or defeat, will depend far more on the involvement **you** allow yourself, than anything I can do or say. **I can tell you that if the Waxman bill does become law, this industry will dry up and blow away; driven underground by the uncertain legal position of what we now do and how we do it.**

In a very real sense, the look backwards we will take at 1982, **12 months from now**, will depend upon the success, or failure, of S.P.A.C.E. That's the Society of Private And

Commercial Earth terminals, just in case you are new to this industry. If SPACE is strong enough, smart enough, and coordinated enough, we'll all be here in 12 months. If SPACE fails, well, I'll be writing the 1983 version of this report on the back of a palm leaf and tossing it into the sea in an empty rum bottle. If you don't happen to see it washing up on your beach, you will hardly notice; you'll be too busy defending yourself in court, building a camouflage "greenhouse" over your backyard dish, or looking for a new business to enter, to worry about how I view 1982 in historical perspective.

**1982.** The year this industry grows up, all the way, or, disappears. Not a pretty forecast, but an accurate one. I sincerely hope we can all talk about it 12 months from now!

**WHAT/WHO IS SPACE?**

SPACE began in Miami, Florida at the 2nd SPTS. Attorney Rick Brown, Coop's friend and a past associate in hard fought cable TV industry battles with Coop, attended the Miami SPTS. He warned attendees they were going to have to form a trade association, firm up the ranks, and prepare for sure legal battles ahead.

**SPACE is now nearly two years old.** It has individual members (\$35 per year), business membership (\$150 per year) and sustaining membership (\$500 per year). SPACE maintains an office in Washington, D.C. which is provided as part of an arrangement with VP and General Counsel Richard L. (Rick) Brown. Brown, and his staff, are regarded as among the most capable FCC attorneys and "lobbiests" in the communications arena today. For this period of our industry, there is probably no better "in-fighter" available to the industry than Brown.

SPACE is managed by an elected Board of Directors, and a President. You are urged to select one of the Directors from the following list, and call him to discuss how you, a non-SPACE member, can get behind this crucial-year-in-the-home-TVRO-industry-effort. Sink or swim, **this is the year.**

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The future of this industry depends upon the total involvement of **every** individual and firm in the business. **1982;** the year of crisis and decision!

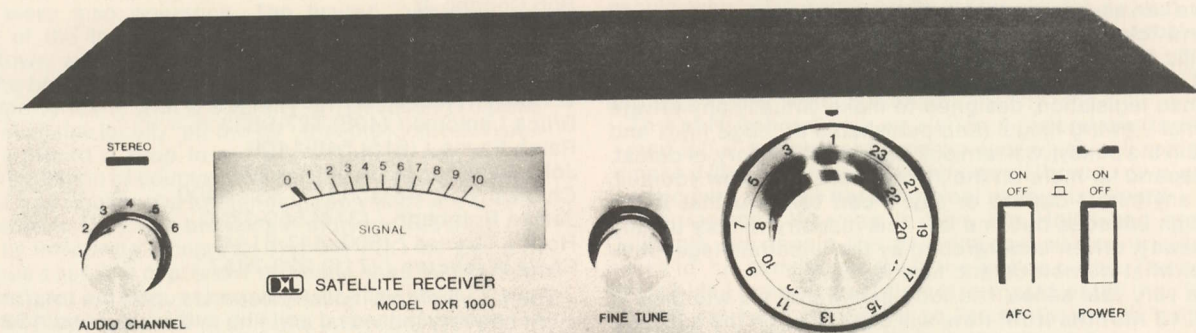
dozen of their flicks each and every night of the week. They know this is true, because they read magazine articles that tell them this. Furthermore, many of their **own** people own these electronic rip-off gadgets, and in fact many of the movie producers and owners have **their own** earth terminals. Naturally this makes them up tight, and they have climbed on Congressman Waxman's case to see what can be done to put a halt to this nonsense.

There is little question that **some type** of legislation **will** wind its way through Congress during 1982. The only real question is how severe will the penalties be for watching a

movie (or anything else), which you do not have permission to watch? The Waxmans of the world would like to be able to tell their backers that they have written legislation which is so strict that only a fool would chance mis-using the private property of the motion pictures folks. A fine of \$25,000 or \$250,000 for watching such a satellite delivered movie, without permission, sounds like a pretty effective deterrent to most people.

**Into this scenario** comes SPACE, the great white (and frankly, only) hope of the "mom and pop" TVRO industry. SPACE makes the point that most home terminal operators



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are not out to steal product. That, given the opportunity to pay for this movie (and other) product, they would gladly do so. Provided, only, that the owners of the product were willing to accept the money, and the fees requested were reasonable.

**Now this sounds good**, if (as they say), "you say it fast". SPACE's Rick Brown has been saying this (fast) for two years now. A few people have accepted him at his word, but most have been less than impressed. The problem is that motion picture (and other "rights owners") are very-very uncomfortable when they cannot "check" and "count" the gate. The gate is where they collect the money. A cable system has a "gate" which can be tallied. Private home terminals, spread throughout the bush and suburbs, cannot be counted. **At least that's what the "rights owners" believe.** Resolving that problem is a big challenge. There are plenty of suggestions floating around, such as charging each terminal buyer a fee at the time he or she purchases the earth station, to cover programming payments. But in truth, nobody really has a saleable handle on that one yet.

The one common sense solution is for all of those services who do not wish to have their signals "pirated" to install equipment, so that their picture and/or sound is distorted. **Scrambling it is called.**

It has been pointed out that if HBO et al scramble, their problems will go away. No, scrambling is not foolproof. Actually, it is "fool" proof. It is not "smart" proof. But if their "private" programs were scrambled, a large percentage (some suggest over 90%) of those who watch the programs without permission would simply accept the scrambling and go on to watch something else. So why doesn't HBO scramble, rather than spend gobs of money and time trying to talk Waxman et al into adopting legislation that makes watching an unauthorized flick a more serious crime than say evading federal income taxes?

Well, there are two reasons. One, if HBO scrambles, HBO has to pay the cost of the scrambler and the cost of the authorized descramblers. Scrambling complicates their business, and they feel this is a needless expense, if they can get the cost of "scrambling" shifted to the people who are causing all of the problems. That's you and me. Why pay for something, if you can get the other guy to pick up the tab? That's reason one.

**The second reason** is more practical. Scrambling, as we know it today, is not all that mature. In fact, it (including the Oak widely promoted Orion system) is really something of a "kluge". That is, a system that has technical problems. If they were to field a few thousand descrambler systems, in the hands of their legitimate and licensed users (i.e. cable affiliates and so on), they would immediately be in the business of sending around a rather sizeable staff of field people to keep these little monsters working properly. They would lose service, perhaps for days at a time, to some of their unfortunate affiliates who had a run of back luck, and when their affiliates lost service, they (HBO) would lose revenue. Scrambling is another one of those "it sounds good if you say it fast" solutions. On hard inspection, it is not a very decent answer to a very tough problem. At least not right now.

So, all of this brings us back to scaring the pants off of the people scrambling is designed to keep out of the authorized viewing "loop". You scare us to death by making a law that has such horrible consequences for violation, that we all go back to listening to the radio, or watching CBN and PTL. All of this will build, and fester, and finally come to a show down battle or two during 1982.

**Threat Number Two:** As any qualified lobbyist will tell you, there are three ways to put the quash on some "special interest group" that is making you nervous. You can legislate against them, you can regulate against them, or you can take them into court. After legislation, regulation comes next.

In the United States you regulate in matters-communication by pounding upon the doorway of the FCC. The broadcasters started there with their cable-foes and managed to get the

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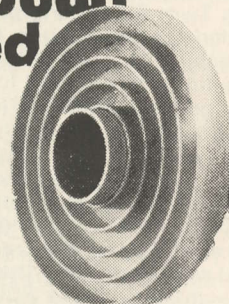


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FCC to adopt restrictive regulations, in both 1966 and 1968, to start the slow down in cable growth. If you are a powerful lobby, you can get regulations written and adopted far easier than you can get legislation passed.

#### Usually.

Only this particular FCC we now have operating is very much against new regulation. They are, in fact, against new regulation and actually favor "free marketplace determination" of problems like this. In other words, unlike most FCCs of the past, the present one answers requests for new regulation with a terse "let the forces of competition work it out".

That is not to say that we have nothing to fear from the present FCC. We have a few strikes against us going in.

**Strike One:** Some very old regulations, already on the books, define quite clearly that common carrier microwave signals are not **broadcast** signals. All satellite signals are apparently common carrier, in one form or another. Common carrier signals, **the regulations say**, are for authorized users only. Broadcast signals, on the other hand, are for anyone to use.

**Strike Two:** Even if the **present** satellite signals are not intended for general use, the present FCC is in favor of establishing (through DBS) a new type of satellite signal that is (in fact) intended for general use. This is a pretty heady project; designing (on paper) a whole new era of direct broadcasting satellites. FCC people working on this project want to see it created in their own images; they have, or will have before being finished, a definite "pride of authorship". Into this situation throw the upstart "mom and pop" backyard terminal industry, already doing in the real world what they want to create "brand new" on paper. What we are already well into, they are trying to create. Sooner or later somebody at the FCC is going to feel the time has come to step on the "mom and pop" system, or there may not be any real need for **their** new creation.

**Strike Three:** Our "mom and pop" industry is doing a few things which are patently dangerous. For example, we are out there selling modulator devices (to interface between the TVRO receiver and the home TV set), and these modulator devices are about as illegal as a 100 watt CB linear amplifier. We are playing around with receiver designs which may, upon close inspection, violate incidental radiation rules and other little known and little understood existing FCC regulations. We are, in a word, possibly, even probably, already in violation of some rules.

Three strikes don't make us out, but they **should** give us cause to think. If one or more special interest groups perceived our growth as a threat, and they were not able to get the support of the full Commission to adopt new regulations to stop or slow us down, there is already good cause for the FCC (through low level enforcement personnel) to give us a fair share of grief and aggravation. Perhaps the wonder of all of this is that we haven't heard from the FCC on one or more of these matters already. We are, in point of fact, sitting on a keg

of dynamite, and for some the fuse has been burning.

**There is more** than a little indication that our industry will "hear from" the FCC during 1982. We can in fact anticipate this message to arrive sooner, not later, and especially if the Waxman type of legislation gets bogged down in the infighting which is certain to develop. The FCC, at least some segments within, is nervous about what we are doing, and how fast we are developing. They are vulnerable to criticism for allowing this industry to get started at all; a vulnerability that started back in October of 1979 when they deregulated private earth terminals. At that time, the staff responsible for the deregulation effort promised a comprehensive look at some "rule clarifications" which they felt were needed, in light of the deregulation of mandatory TVRO licensing by the Commission. That was more than 26 months ago, and that "clarification" has still not been released. It has been in that same 26 months that we have shot from perhaps 20 new terminals per month (nationwide) to nearly 2,500 per month today.

**Threat Number Three:** Court. The Betamax (Sony) decision, handed down late last fall, in which it was ruled (by a Court of Appeals) that private, in-home video-taping is illegal when the subject of taping is (ho-hum) network or other copyrighted television viewing fare...that's the concern here.

Whether the Appeals Court decision stands, for all time, remains to be seen. Of instant importance to us here is that there is now a decision that says, in effect, "...a person cannot do what he wishes, in the privacy of his own home, with his television receiver and attachments thereto...". A TVRO terminal is an attachment thereto.

If taping "That's Incredible" is illegal (the court says it is), then watching HBO inside your home, via SATCOM F1/F3R is at best terribly dangerous. Sure, proving that you are watching HBO is another thing. But who wants to sit around watching television with the doors locked, the shades pulled down and only after swearing the kids and the wife to lifetime secrecy!

A similar case could well be brought against some poor, unsuspecting TVRO owner. But wait - there is more. And this is what hurts the most.

**The same court also ruled** that if you **manufacture** Betamax (i.e. VTR) gear, capable of recording off-air TV (copyright protected) programs, you can be hauled into court for "aiding the crime". The court decided that in spite of language attached to the VTR, by the manufacturer, that "Use of this machine to videotape some (all) broadcast television programs MAY be illegal...", the whole design, construction and promotion of the machine **was in fact** aimed at doing precisely just that. Recording off the air "That's Incredible", or something else equally mundane.

So, if building and selling a box that has been designed with the capability to break the law is illegal, then designing and selling a TVRO system just **might** have the same penalties

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attached to it. That is what worries this industry, in the courtroom realm, right now. Might not that same courtroom logic transfer to the home TVRO field?

If it did, and if such a case was brought and fought to successful completion, then the mere possession of a letter of permission from CBN And PTL would not (it is feared) be an adequate defense for individual court action against TVRO system owners. Nor would it spare the manufacturer, and perhaps even the dealer/distributor, from an apparent liability!

And this may also work its way into the lime of our light of attention during 1982.

#### These Are The Things...

These are the things that has SPACE so concerned. These are the things which those who understand how industries get started, and destroyed, fear for 1982. These are the things which a small, under financed and struggling industry run by "moms and pops" will have to find some way to deal with during 1982...if they want to be around to see 1983.

#### The Positives

Thus far, the year-that-will-be looks pretty negative; pretty dark. It seems like it might be a good year to take a long fishing trip. There are, fortunately, some positive events now shaping which will add some moments of isolated happiness to our battle for survival during the new year.

**New satellites**, covered extensively in recent issues of the **Digest**, will be both a challenge and a revelation. SATCOM 3R and 4 will replace, in services carried, F1 and D1/D2. The 3R bird is supposed to have a redefined "boresight" which RCA had, at one point, promised would improve service coverage in the southeastern USA. It will also have four of the new 8.5 watt higher power transponders. SATCOM 4 will also have a quad set of the 8.5 watt transponders, and it will be the first bird, with cable programming, to sit off on the **eastern end of the orbit belt**. The east-end part will provide the most intrigue since its "look-view" of North America will be substantially different than past cable programmed satellites. In theory, 4 may have some difficulty with the Caribbean areas. The dBw EIRP "ridges" will be quite close together, in the southeastern perimeter of the USA, and this tightening of the ridges toward the Caribbean may well spell low to very low signal levels for that bird, there. "**May**" is the operative word here; we won't know until it gets on station, and has been put into service.

The pair of new WESTAR birds (4 and 5) will be with us before 1982 winds down. These will be the first 24 channel birds for Western Union, and their impact will be substantial. The number 4 bird will slide into position where WESTAR 1 now sits, and replace W1. This sky location, about 1 May or so, will then become a 24 channel location and video will be very evident. Westinghouse will have five of those transponders at the start of service, all to be used for the new ABC/Westinghouse cable news service. There are a number of changes in the new WESTAR birds; we will have to learn all over again what to expect in the way of coverage patterns.

The biggest business opportunity, perhaps, for 1982 in the "new services area" will be the followup that occurs, as a late 1981 FCC ruling gets into the stream of commerce. As reported in the December issue of **CSD**, the FCC now believes that US domestic satellites should be allowed (through the respective program carrying common carriers) to serve areas outside the USA. The Commission has approved legal service to Bermuda, Canada and Cayman Island for openers and many more for other non-US territory are in the pipeline. This means that if you are or know someone who has a reason to request formal service from, say WTBS, to deliver it into whatever terrestrial system as might be appropriate in El Salvador, there is now a procedure approved by the FCC for this to happen. The FCC's ruling in this area was the dropping of the first shoe; they, in effect, said that they have no "policy problem" with such extension of services to non-US areas. The other shoe may not drop until late in 1982 however. The FCC ruling made it **possible**, now, for such operations, but it did not make them automatic.

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**All of this** sleight of hand was created because the US is a part of INTELSAT, and one of the multi-nation INTELSAT agreement conditions stipulates that no nation, a part of INTELSAT, shall allow international satellite communications to occur without the approval of INTELSAT; on birds other than INTELSAT birds. This was a "monopoly" situation to protect INTELSAT from other developing satellite systems, more than a decade ago.

**As a practical matter**, INTELSAT is not today geared up (with satellites or transponders) to get into the multiple channel, 24 hour per day, **strong-signal** television common carrier relay business. Even if the transponders, in a position appropriate to serve Central America and the Caribbean for example, could be found and moved into position, there is another problem with signal levels. The INTELSAT birds have the technical capability to operate on a spot beam configuration (with EIRPs of 32-34 dB) but they must or can do so only at the expense of reduced operating power available to other hemispheric and global pattern services. INTELSAT has never shown much enthusiasm for fulltime utilization of their spotbeam configuration, and that is understandable. Lacking use of a spotbeam, the INTELSAT's **next lower** antenna configuration service level is in the 25 to 26 dBw region; the hemispheric beam. Such levels, while within reach of 7 to 9 meter antennas, are not useable by antennas in the six meter and down class.

The procedure for getting fully operational, using the US domestic satellites for service to non-US areas, is as follows:

- 1) **First** the would be user selects the common carrier service(s) he wishes. A contract is negotiated for the service.
- 2) **Then** the carrier plus applicant go to the FCC for approval of the "point of service".
- 3) **When this approval is obtained**, the real fun begins. Since INTELSAT has the exclusive right to carry international telecommunications by satellite, the applicant must obtain from INTELSAT either their agreement to provide the same service at the same rates (thereby bypassing the US carrier and bird), or, an admission by INTELSAT that they cannot provide the same service/rates. Granted that this occurs, then the service may finally begin.
- 4) **In the event** that INTELSAT sits upon the request for an unrealistic period of time, there is one other avenue open. The appropriate US government agency (State Department), and the counterpart representing the nation into which the new service will be taken, can get together and approve the service. This amounts to a high level international "agreement", and with that in hand the FCC will then place its final stamp of approval on the service.

**As you can see**, none of this is going to be automatic. It will take time to work out. The year ahead, 1982, is that time. The tough ones will be the first few to run the gauntlet. After that, perhaps by the second half of 1982, life will be much easier



for this type of service.

**This whole procedure** may well turn out to be a two-way street, by the way, before 1982 is over. You will recall that ANIK satellites have been prevented from delivering their services into the US **legal** marketplace because of a 971 accord between the US and Canada. Now that the US side has, in effect, "broken the accord", it is likely that the Canadians will do the same. This will make use of Canadian broadcast services, those on ANIK-B as well as the four new CANCOM services on ANIK 1-2, available to the US cable industry, as well as SMATV and private terminals. It may also create some very interesting service applications in specific areas such as Bermuda and the Bahamas, where English-English television, from a Canadian source, could well end up being utilized on a regular basis for the local Bermudian or Bahamian broadcasting operations.

The bottom line is that by 1983, with regular "trans-border service" being done by supposedly **domestic** satellites, the very fiber and fabric of satellite communications will change remarkably. We ain't seen nothing yet!

#### Satellite Services...

1982 will be the year for a multitude of brand new video services, aimed primarily at the nation's cable television operators. Everything from 24 hour John Coleman weather and 12 hour per day Dr. Art Ulene health care, to channels for folks over 45 and erotic services for folks of all ages, will spring into life during 1982. We will end up 1982 with no less than twice as many video transponders available as we now have in the sky. There will be 100+ channels available at almost any given instant, as 1982 winds down.

Scrambling will **not** find its nitch in 1982. It will start, in some quarters, to become more commonplace however. The final, irrevocable decision by HBO and others will depend largely upon the adoption of legislation (i.e. such as the present Waxman plan). **If** the legislation is **not adopted**, or is adopted in a form which HBO et al cannot accept, then the decision to

scramble will come much easier for them. On the other hand, if it becomes a serious offense to view their services, they are not apt to scramble.

#### The Equipment Changes...

Faced with an uncertain future, there is apt to be a slow-down in new research and development and the marketing of new products; **until the Waxman type of confrontation is resolved.**

This uncertainty will also contribute to negative policy decisions on the part of really big corporations who **could** enter this market at most anytime. **As long** as there is the **threat** of a shut down of the industry, we won't see new entrants of big dollar importance popping up. That will buy some more "coasting time" for the present pioneer-manufacturers.

**On the other hand**, if (or when if you are an optimist) the Waxman matter is resolved in a manner which we can live with, watch out! That will signal the entrance into the market of some really big name firms with the bucks necessary to put home TVRO terminals into the same visibility strata as VCRs (a poor comparison, perhaps, under the Betamax decision!) and big screen projection television sets.

**If there is a total unknown for 1982, that's it.** The timing, or appearance at all, of several big name, big dollar firms who have been itching to jump into this market with both feet.

Those general assessments aside, what about the nitty-gritty of hardware?

Antennas developments offer the ripest areas for new breakthroughs. Most everyone in the antenna business knows well that hand fabrication of antennas is a long, slow and expensive process. Automated techniques would drop antenna manufacturing time by as much as 90%; and lower costs substantially (although hardly 90%). But the market is not yet large enough for such techniques. And it is not likely to be, prior to the resolution of the Waxman bill mess. If and when that comes about, we can look forward to an entire new

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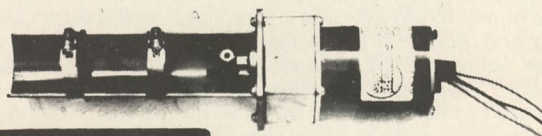
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generation of highly accurate, lightweight antenna systems which will finally bring the antennas into line with the ease of handling that we now enjoy with the receivers and LNAs.

**Will 1982** be "the year" of the Japanese invasion of the home terminal marketplace? Probably. But it is not going to come from the established video/broadcast folks in Japan. At least not at first. Remember that among the first large scale, mass-producers of satellite hardware in the USA we had KLM, Sat-Tec and now R.L. Drake Company. What do all three of these firms (accounting for nearly 2,000 receiver units production **capacity** per month, now) have in common? All three came into the TVRO receiver business from the ranks of producing amateur radio transceivers and equipment.

The 1,000-per-month clip of firms such as KLM has finally attracted the likes of Yaesu, and other, Japanese electronic manufacturers. Production grade satellite receivers from Japan are already circulating in North America, and at least one major distributor of electronic hardware is now nailing down a delivery arrangement that may start before the second quarter of 1982.

The primary impact of this off-shore production will be in the \$900 to \$1200 (retail) price class receiver range. The really fancy, and really cheap, receiver gear will be later in the year.

**These are not** the big Japanese manufacturers. **Yet.** But they will establish substantial Japanese entry into the marketplace, and US receiver suppliers will find it increasingly difficult to maintain their "share of market" during 1982. The one ingredient which could tip the scales, either way, will be the speed with which the LNC unit grabs hold during the new year.

The LNC has been a curiosity until now. KLM with MA/COM, and Dexcel with itself, have been experiencing start-up growth pains in this LNA plus down converter packaging since the first units were shown at SPTS Washington (DC) nearly one year ago. With the maturing of LNCs this year, there are those (such as National Microtech's Dave Fedric) who see LNC receivers taking over 50% or more of the marketplace by the fall of 1982. This would have a considerable impact on who maintains a temporary lead in receiver sales battles. If half or more of the receivers being sold by late this year are really "70 MHz input" units, because they are designed to work with the LNA plus down converter LNC package, American sellers could hold onto their "share of market" for perhaps another year or so. If, on the other hand, the LNCs stumble on the way to the market, the efficiency and resources of the Japanese electronics industry **could** give the US suppliers fit, since one of the major receiver-quantity-production-problems is the 4 GHz front end now found in virtually all satellite video receivers. Taking the 4 GHz front end out of the receiver producer hands, and transferring it to the LNA manufacturer hands, will be a boost to US suppliers; for a short period of time. Ultimately, it will help bring into the marketplace an entire new group of off-shore (not necessarily Japanese) suppliers.

Receivers would seem to be leading the evolutionary process. They will continue to evolve during 1982, **and if there is a breakthrough**, it will be in the demodulator area. The industry now seems less enchanted with PLL (phase lock loop) demodulators than it was one year ago, but the marriage is hardly on the rocks. What is missing is something that works as well, or better, as cheaply, without the undesirable side effects one finds with the PLL (tearing video edges at transitions, etc.). There is some hope in the digital demod area, but those who have worked there so far have not been able to tame it for mass production. Or at reasonable cost. That's the engineering challenge of 1982.

#### **The Politics of 1982...**

The industry has undergone wide ranging changes since one year ago. We have matured to a point that few would have forecast one year ago; **CSD** included.

With that maturity has come a new "pecking order" amongst the influentials of the industry. We entered 1981 with a single,

strong leader; Taylor Howard. We enter 1982 with a redistribution of that leadership role. No clear leader has evolved although certainly SPACE's Brown has jumped into fill many of the Howard voids.

**Brown's fortunes**, and fame, will depend largely upon how well he does, and how well the industry does, with the now threatening storm clouds. If Brown does well, and the industry supports him to a successful solution to the Waxman-Crisis, Brown can just about name his meal ticket for the balance of the year. Given that scenario, Brown will push for one and perhaps two SPACE sponsored and run "trade shows" per year. One will be slanted for industry participation, and the second for "consumers". He will also urge the SPACE Board to give him a free hand to get SPACE into the publishing business, and the mass materials distribution business.

There has been a substantial part of the industry which has not supported SPACE to date; both dealer/distributor types and of far greater importance, hardware manufacturers. Without naming names, many of the boot strap vendors, who have pulled themselves up a notch at a time, apparently feel uncomfortable being a part of an industry trade association. They have not only shied away from participation, but from funding SPACE as well. To those who **are** supporting SPACE with funds and legwork, this is a situation that cannot continue. There are subtle, but substantial pressures, being placed on those who remain outside the fold. Some of that could well backfire during 1982.

The multi-talented John Rohner made a stab at concocting a SPACE opposition force early in 1981. He called it the STIA; Satellite Television Industry Association. It is still alive in name only, but as long as Rohner has anything to do with it success will be a fleeting thing. Others with far more common sense, and probably integrity, than Rohner will spend time trying to get a competitive trade association starting during 1982. It will not fly, and it will come at a time when division of the ranks can least be afforded. But it will happen none the less.

#### **The Year Ahead...**

1982 will be **the** most important year in the short history of this young, upstart industry. The challenges will seem insurmountable. The death of the industry will hang around numerous corners, and each month will be a new exercise in staying alive. Faced with those types of challenges, faced with the uncertainty of the future, it may well turn out to be the year that we all try to forget (quickly) as 1983 rolls around.

## TECHNICAL CORRESPONDENCE AND NOTES

#### **CANADIAN CONSULATE CORRECTION**

Your paragraph on the Canadian Consulate in Chicago (page T16, 11/81) was not exactly correct. You indicate that a school experimental TVRO, was able to get permission to tune-in ANIK transmissions from the Chicago Canadian Consulate, may have done so because the Consulate was not fully aware of what it was doing. Or that it may even have lacked



the authority to grant such permission. It turns out that the Chicago Consulate, upon discussion with Canadian governmental authorities, became fully cognizant of its actions regarding the high school in question. Adopting a realistic attitude however (something rare in political circles), the Consul office did **not in fact grant permission to view** satellite **broadcasts**, but rather, stated that the Canadian authorities had "no objection" to the school's proposed use of the transmitted material. This is a very fine-line distinction, perhaps, but one that was politically astute. Oh yes, keep up the good work and thanks for putting stereo back into my life!

James J. Smat  
President  
Earthstation, Inc.  
Chicago, IL 60602

**A fine line indeed! That suggests, fellows, that when you go to the local Canadian Consulate to request permission to view the ANIK signals that you not ask for permission to view the broadcasts; rather you ask whether or not (based upon the precedent established by the Chicago Consulate office) they have any objection to your "proposed use of the (ANIK) transmitted material". This whole business may have been a trial balloon (another political ploy commonly employed) to take the edge off the rapidly developing scenario between the US and Canadian authorities wherein the US FCC is now approving the principle of US services being used outside of the US of A.**

## BIRD OPERATIONAL NOTES

**WOR IS IN TROUBLE.** Super station, carried to F1 transponder 17 by Eastern Microwave, will be dropped from transponder 17 because actual transponder owner, SHOWTIME, wants the channel back. SHOWTIME is new partner in something called "The Health Channel", which will start up 24 hour programming around May 1st. Under tutelage of Dr. Art Ulene, NBC resident doctor. Chances are WOR will not be on F3R after F1 is retired.

**NASA** now hopeful that in 1984 federal budget they can get start at putting together low orbit (230 mile) "SPACE PLATFORM". Primary purpose of platform, at first, will be experimentation in development of high quality structural building materials and drugs, in absence of heavy earth gravitational field.

**WINNER** at SVS '81 Anaheim, of complete TVRO terminal given away was "doorprize" by STTI, was Bob Taylor of Van Nuys, CA. Taylor is a professor of physics at UCLA and a native of Hungary. He escaped Hungary during revolution, spent time prior building and selling short wave receivers for tuning in Voice of America. Welcome to the world of TVRO's Dr. Taylor!

**RUMORS** flying at press time as to condition and turn-on date for F3R. Wild rumors reported bird got away from RCA at one point, rumor-spreaders claiming RCA lost two year supply of propellant before getting bird back: Bird was undergoing midnight to 6 AM (eastern) sweep testing during middle of December, with video test signals expected daily. Earliest 24 hour test signals expected around 29th of December; you should be able to find it any time of day as you read this, at 131 west. **Remeber - CSD** is looking for your reports on reception, both before and after the F1 to F3R switchover (probably around 1 February).

**F4** scheduled for launch next; as early as January 14th. Then, long hiatus for RCA with **1-R** scheduled March '83, **2-R** August '83 and **5** in October '83. Next up this spring is WESTAR 4, first 24 transponder bird for Western Union; to replace W1 bird.

**SBS** may have competition by late 1985. USAT, new group planning to spend nearly \$250 million to launch a pair of 12 GHz birds to 88 and 122 west, believes SBS rates and structuring is too "high priced". Group says it has dollar backing of Manufacturers-Hanover Trust Company, New York City.

**12 GHz** terminals broke out at Anaheim, CA cable television show. Lowest priced units shown were from CMX-ORROX Corp; packaged with 6 foot antenna, LNC, indoor tuner. Prices quoted ran from \$2,000 in 100 lots to \$500 for "big buys".

**ONE** industry newsletter speculating that there may be a four-continent-DBS-bird in planning stages at 37 west; to cover most of Europe, Africa, South America and eastern half of USA. Same source suggests a "tax haven" country such as Grand Cayman, would be home for "project". It's all speculation for now.

**SSS** now has five (!) vertical interval users; latest to add is Dow Jones. Also on the VBI format is Reuters NewsView, UPI CableWire, View Weather and Consumer News.

**SSS** also making news by putting together consortium of users on Southern Pacific's SpaceNet 1 bird due to launch last part of '83. SSS and other cable oriented users of bird want to give away 1,000 five meter terminals to cable systems to insure new bird has large audience. These are to be 4 and 12 GHz birds.

**CANADA** may reconsider plan to **not** allow religious telecasters on ANIK birds; hearing is scheduled in Hull, Ontario last week in January to hear proposals.

**INTERGLOBAL** Satellite Systems is successor to both Downlink and Skyview firms, selling terminals in home market. ISS reportedly was financed by public funds raised in marketplace. ISS operates out of Chicago; Downlink will become R and D and manufacturing arm for re-constituted venture.

**MEXICO** zeroing in on format for SatMex. System as presently planned will have three 12 GHz transponders (72 MHz wide) plus 24 in the 4 GHz band. Six of the 4 GHz channels, one of the 12 GHz channels, would be devoted to television networking or DBS (12 GHz). Launch dates still years away for two satellite systems.



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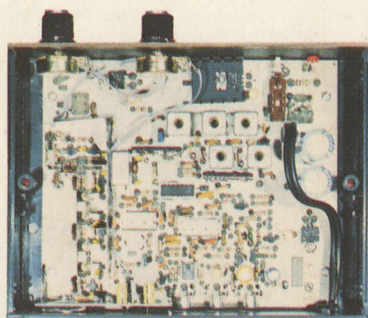
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